HAWAIIAN PLACE FRAMES

Using cultural resources as guides for the
design of an indigenous based spatial framework

Design Application:
Homestead Development, Anahola, Kaua‘i

Kanoa Chung
December 2009

Submitted towards the fulfillment of the requirements for the Doctor of Architecture Degree.

School of Architecture
University of Hawai‘i

Doctorate Project Committee
Amy Anderson, Chairperson
Hyoung-June Park
Luciano Minerbi

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We certify that we have read this Doctorate Project and that, in our opinion, it is satisfactory in scope and quality in fulfillment as a Doctorate Project for the degree of Doctor of Architecture in the School of Architecture, University of Hawai'i at Mānoa.

Doctorate Project Committee

Amy Anderson, Chairperson

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I. PREFACE

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He mahalo keia e koʻu wahine, koʻu ʻohana, koʻu mau hoa, na Kumu, a me ke Akua manaloa. O ka naʻauao, ka ʻike hoʻonui, ka ʻolelo paipai, ame ke ahonui i makana ai ia ʻoukou iaʻu ka makana i hoʻolalelale ai i koʻu mau la apau. Aloha.[1]

Thank you to my wife, family, friends, professors, and God. The wisdom, knowledge, encouragement and patience you have shared inspires me in everyway.

-Kanoa

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[1] Freitas, Ikaika. Translation. 9 Nov. 2009.

Personal Statement

As a Native Hawaiian I believe the future of our culture and people rest in my generations ability to recognize and correct the way foreign societies have shaped the social and spatial character of the indigenous landscape. From a small child I have watched developments pave over, tear down and pollute the place I call home. I feel that few questions are raised as to how each new development integrates culture into the creation of each of the new structures, roads, and communities that fill the landscape.

In the traditional Hawaiian setting a great deal of consideration went into the creation and placement of new spaces and objects. An appointed official of the *aliʻi*[2], referred to as a *kuhikuhipuʻuone*, was given the responsibility of ensuring all things created were *pono* in regard to cultural protocol.[3] Only after ensuring all protocol was adhered to could any development proceed.

Today's architects are the contemporary version of the *kuhikuhipuʻuone*, yet the protocols and methods employed by them lack the necessary keys to ensure the land and culture is protected. For the last one hundred and fifty years western design methods have influenced the mindset of the islands *kuhikuhipuʻuone*. This pattern needs to change. *Kuhikuhipuʻuone* of Hawaiʻi must rise up and begin to consider how the choices they make impact the land, culture and people. In the words of Kamehameha I in his own struggle to establish a unified nation[4];

"Imua e na pokiʻi a inu i ka wai ʻawaʻawa Aʻohe hope e hoʻi mai ai"

Let us move forwards my brothers and sisters and drink of the bitter waters.
There is no turning back now. There is no retreat.

Those in high places must consider their role in the future of the development of the Hawaiian Islands. The people and culture are increasingly endangered by poor decisions. It is time for change. That time is now.

[2] All Hawaiian vocabulary words are *italicized* and colored *gray*. Definitions can be found in the **Hawaiian Definitions** section of the **Index/Appendix**. This excludes all place names and quotations, as well as words used in graphics and imagery.
[3] Kepelino. "Traditions of Hawaiʻi." Honolulu, HI: Bishop Museum Press. 2007.
[4] Apaliona, Haunani. "Kau Inoa Registration Launch." *OHA*. 22 January 2004. Web. 10 October 2009. <http://www.oha.org>

II. CULTURAL REVIVAL BY DESIGN

The Problem

Today there is an ongoing struggle to create new places that respond to indigenous Hawaiian culture in a predominantly westernized society. Nostalgia has led to poor representation of indigenous traditions, while current economic and political schemes push contemporary Hawaiians towards complete foreign assimilation. As a result of the stated conflicts, many Native Hawaiians, myself included, have lost sight of the indigenous concepts that have given the places we inhabit their true identity. This project serves as an investigation of the concepts and resources that have been used to define the spatial character of indigenous Hawaiian places. In doing so, the study looks to rethink the way we approach the development of the land and the design systems used to do this task.

Over the last two centuries foreign development systems have dictated the pattern for indigenous Hawaiian settlement. The largest example of this is the Department of Hawaiian Homelands [DHHL] a state agency set aside for rehabilitating native Hawaiians. DHHL' s current developments are marked by large tract subdivisions and gentrified house lots. The consequence of such projects is culturally devoid homes and communities, indistinguishable from mainland U.S. counterparts. Decolonizing the ideas used in conventional, foreign based place-making and redirecting the emphasis to a set of indigenous Hawaiian design principles provides a considerable solution for breaking the mold of current development systems here in Hawai'i.

Anahola, Kaua'i's largest native Hawaiian community is a prime example of the discord of current development methods and the desire to embrace indigenous Hawaiian culture. On one hand, community members continually call for "culturally centered development"[5], while on the other; their homestead and community options are no different from what one might find in a mid-western U.S. suburb. Recognizing this conflict, the latter part of this project will use Anahola as the site for the application of a new system for indigenous-based design and development.

To completely disregard the patterns and principles used in the current development system is disadvantageous. Westernization has brought about technological advancements and planning principles that, when used in accord with indigenous concepts, present viable solutions for the design of communities. Integrating benefits of westernization, particularly geographic information systems [GIS] and modern design technology, can help in providing better execution of indigenous spatial topologies.

By identifying the indigenous concepts used to create the identity of place and organizing them into a set of spatial principles, this project proposes a new framework or *Place Frame*, for creating the new spaces [homesteads, communities, etc.]. In doing so this project looks to find a solution to the current patterns for island design and development that have dramatically altered the identity of the Hawaiian people, their land and culture.

[5] DHHL. "Regional Plan: Anahola, Kaua'i." Honolulu, HI: DHHL. 2007.

Scope of Investigation

The focus of this project is to identify the concepts and constructs that form the spatial character of indigenous Hawaiian places and then translate that information into a set of design guidelines for development. Collectively the guidelines will form a framework or *Place Frame*, which defines spaces and can be used for homestead design at Anahola.

In addition to the identification of indigenous concepts and constructs there is a brief review of the foreign systems that have come to control the spatial character of most contemporary developments. The review begins with colonization in the 1800's and retraces the influence foreigners have had on the spatial patterns and relationships in Hawai'i over the last 150 years.

Spatial Concepts and Constructs

The design guidelines are based on a set of five dominant social and spiritual concepts. These include; *akua, 'ohana, 'aina, 'ai/wai* and *mana*. The concepts are broken down into four spatial principles or constructs that are outlined by a set of texts, tables and diagrams. These include; *boundary, alignment, magnitude* and *proximity*. Each construct provides prescriptive solutions as to how the identification and use of cultural resources can be formed into a collective spatial framework. The framework then becomes a system for the delineation of new spaces at a setting.

The information used to create the spatial constructs is not entirely drawn from the cultural setting. Each construct is a combination of information taken from Hawaiian literature and foreign tools for delineation. As an example, the Hawaiians recognized every resource as having a force known as *mana*. To account for the extent of an object's *mana* the foreign concept of magnitude can be applied as a system for measurement. Taking Hawaiian concepts and using foreign instruments to delineate them results in a hybrid system that bridges indigenous ideas with foreign design tools.

Representation of spatial constructs is also a hybrid process. The Hawaiian view of the world was multi-dimensional [Hawaiians had no system for mapping thus almost every relationship in space was based on human perception]. Expressing this in a tangible format requires an interpretation of space and a method for representing these relationships. Three-dimensional modeling software [as opposed to two-dimensional mapping software] helps develop a framework that more accurately accounts for relationships in space.

Application

Taking all the spatial constructs and applying them to a site is the final step in realizing the new framework for design and development. Anahola, a large land holding of Department of Hawaiian Home Lands [DHHL] on the east side of Kaua'i is the ideal setting. With a rich cultural resource base and a number of proposed sites for future development, a new spatial framework can provide potential solutions to the current foreign system used for the community design. The final product will be a spatial framework based on the site's cultural resources and a series of homestead groupings placed according to the framework guidelines.

Methodology

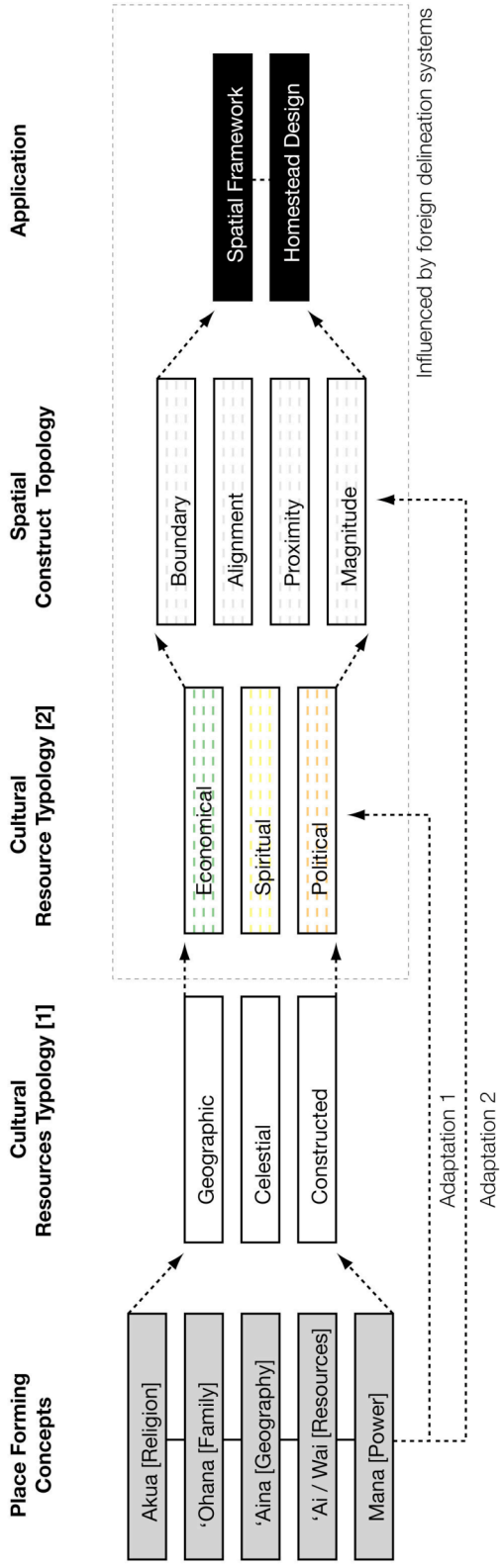
This project proposes a three-part system that reconstructs the key spatial principles that have served in delineating indigenous spaces. The first part identifies and categorizes indigenous concepts that show major influence on the spatial character of place. These include; *akua, ʻohana, ʻaina, ʻai/wai* and *mana*. The second organizes these concepts into a set of spatial principles or constructs. These include; *boundary, alignment, magnitude* and *proximity*. Each construct is drawn from the different spatial patterns and relationships displayed by each concept. The third part assembles the spatial constructs into a collective framework or *Place Frame* that illustrates how new spaces can potentially be delineated in the landscape.

The objective of the resulting framework is to provide a design system that enables designers and planners to create places [homesteads, communities, etc.] through an indigenous-based logic. The logic provides a system for delineating spaces based on indigenous precedents as opposed to the current foreign-based methods that typically occur arbitrarily to the indigenous culture. A site at DHHL Anahola will apply the new framework or *Place Frame* to the design of a series of homesteads.

The major sources used for the development of the framework and principles include; existing literature on the indigenous Hawaiian lifestyle, land division and distribution information dating back to early foreign contact, and discourse with Hawaiian elders and other cultural specialists. It is necessary to recognize that although each of these sources provides insightful information into the spatial concepts and constructs used in indigenous-based space-making, they only touch the surface of potential information on the subject matter. Further in-depth research in; historical Hawaiian literature, mythology, and archeology can potentially reveal more information on the proposed spatial principles and concepts that inform them. To stay within the academic timeframe, this research will use the aforementioned sources as the basis for design and leave the latter sources for more in-depth future studies.

Although the application of the framework will be used to design a series of homesteads at DHHL Anahola, the proposed spatial principles and resulting framework is intended for any location in Hawaiʻi. It is my hope that designers and developers can look to the proposed principles and *Place Frame* and use them as a guide for creating spaces that respond to, and respect the culture that has laid the foundation for the indigenous people of the Hawaiian Islands.

Chart II.1.1 Methodology Illustrated



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Major [Spatial Governing] Indigenous Concepts

To develop an indigenous based framework for designing, the concepts that inform spatial relationships must first be defined. The identity of the Hawaiian people takes root in an interconnected system of beliefs, protocols and relationships. Translating this information into a set of spatial principles requires an understanding of the major concepts in Hawaiian culture. Although many different concepts influenced indigenous spatial relationships, five appear to have been the strongest. These included; *akua, ʻohana, ʻaina, ʻai/wai* and *mana*. Each will be discussed in regard to its role in Hawaiian society and in the way it influenced the delineation of space. A collective guide that shows notable Hawaiian scholars' views on each concept ends the chapter.

Akua [Religion]

Native Hawaiians were spiritual people. Almost every place and activity had a spiritual affiliation that shaped the way people interacted with it. Everything from the location of crops, the orientation of structures, to the limits of resources and land areas were influenced by the spiritual beliefs of Hawaiians. Examples of spirituality influencing relationships in space included things like: the creation of structures in areas affiliated with deities [*ahu* dedicated to *Kane*, a deity associated with taro, would have been built in an area of high taro production], the orientation and alignments of structures [i.e. *heiau* or *ahu* dedicated to *Lono*, an agriculture deity, might be aligned with a solstice that indicated the beginning of a planting season], and the divisions of land [i.e. *Wao akua*, areas in the upper regions of mountains, were believed to be places for the spirits and were recognized as prohibited spaces for man].

Translating the religious concepts into a spatial framework requires an assessment of the religious significance of resources and the various boundaries and patterns of interaction influenced by each relationship in space. The specifics of these classifications are discussed in **Chapter VI. A Hybrid Design Guide**.

ʻOhana [Family]

According to noteworthy Hawaiian scholars, the fundamental organizational unit of indigenous Hawaiians was the *ʻohana*. *ʻOhana* was a family group that consisted of blood, marriage and adopted relatives. Most *ʻohana* occupied pieces of land known as *kauhale* and *ʻili*, which contained units for living and agricultural production.

The patterns formed by the settlement of *ʻohana* were the results of a number of spatial relationships. With no form of privatized tenure, *ʻohana* lived on land that was temporarily granted to them from *aliʻi*. The pieces of land given to them were typically located in areas where they could maintain a subsistence lifestyle. The diverse agricultural resource base of the islands resulted in the widespread distribution of *ʻohana* and their living areas. Some *ʻohana* dwelt in the upland hills and plains, while others lived near the ocean and riverbeds. These relationships show how the locality of agricultural resources directed the settlement of people, controlling the locations of families and influencing the spatial relationships of an area.

The way each *'ohana's* land was delimited also influenced relationships in space. Lands with defined boundaries [typically those of higher ranking families] were more likely to prohibit community accessibility, while lands with less defined boundaries [typically those of common families] were more likely to permit access through a site. The *Land Commission Awards* following the distribution of land in 1848, illustrates this through a variety of boundaries and limits used to describe each *'ohana's* land holding. The specifics and various classifications of the tools used to delimit these spaces are discussed in **Chapter VI. A Hybrid Design Guide**.

'Aina [Land]

Hawaiians believed the land was not only a set of physical features but also a living life form. This view was tied to religious traditions, as they believed the union of two deities was responsible for the birth of man and earth. As a result native Hawaiians approached the 'aina with a high regard, respecting all that was in and of the land. An example of this can be seen in the way Hawaiians gave names to spaces and the resources that defined them. Author Kanahele reflects on this, noting each small patch of earth had a reason for being, had a place in the grand scheme of geography, which needed to be remembered and dignified by a name of its own.[6]

The recognition of the various parts, places and divisions of the earth resulted in an extensive bank of land and resource typologies. Each of these typologies provides useful information in the way space was delimited. Some of the many classifications include;[7]

Moku:	Island
Okana:	Island political boundaries
Ahupua'a:	Watershed based political boundaries
'Ili:	Homestead like subdivisions
Kuamauna:	Directly in back or front of summit
Kuahea:	Stunted tree growth region due to altitude
Kuahiwi:	Mountain, Ridge
Waonahele:	Inland forest region, jungle, desert
Waolipo:	Inland region
Ma'ukele:	Rainforest Area
Wao akua:	Spirit Inhabited Region
Wao kanaka:	Human Frequented Region
'Ama'u:	Place where ferns are found
Moku la'au:	Tree grove
Ulu la'au:	Forest, Grove of Trees
Ulunahele:	Wild Growth Area
Wao koa:	Region where *koa* grows
Pahe'e:	Cleared area, bare dirt
'Ilima:	Place where *'ilima* grow
Kula:	Plain, field open country
Pauku:	Parcels of land where taro was grown

[6] Kanahele, George. "Ku Kanaka Stand Tall." Honolulu, HI: University of Hawai'i Press. 1992. [183]
[7] Handy, E.S.Craighill and Puku'i, Mary Kawena. "Native Planters of Old Hawai'i: their Life, Lore and Environment." Honolulu, HI: Bishop Museum Press. 1972. [Various]

Kihapai:	Cultivated land
Lo'i:	Taro patch
Kuauna:	Taro banks used for planting
Koele:	Land cultivated for *ali'i* and *konohiki*
Kuakua:	Small arable land sections
Iwi:	Ridge formed by stones bordering cultivated land
Mala:	Sweet potato patch, lined with stones
Ika:	Bounds formed by the elimination of weeds and grass
'Apoho:	Depression, void, open pit
Kahakai:	Beach, sea shore, coastline
Kahaone:	Sandy beach
Kalawa:	Road along beach
'Ae kai:	Water's edge

Judging by their descriptions, there were a variety of ways spaces could be defined and delimited. As an example, the marked boundary of an *'ili* was much more defined than the interpretable limits of a *wao koa*. The specifics and various classifications of the tools used to delimit the differences are discussed in **Chapter VI. A Hybrid Design Guide**.

'Ai / Wai [Life Sustaining Resources]

'Ai, meaning food or to eat, was the basis for the concept of *'aina*, which means land. Similarly, *wai*, meaning water, was the root for key concepts in Hawaiian living such as *waiwai*, meaning prosperity and *kanawai*, meaning law. Both *'ai* and *wai*, respectively food and water, represented the means for Hawaiian subsistence and conduct.

The location and use of *'ai* and *wai* resources played a major role in the patterns of settlement and interaction. Both served as the core elements in economic [i.e. subsistence, exchange, production] and political systems [i.e. resource management, interdependence, governance]. This created a number of influences spatially. Settlement density and dispersal, land and resource privatization, and resource accessibility were all results of the way people regarded *'ai* and *wai* resources.

Historical accounts by early explorers document these patterns well, noting increased densities about major waterways and the dispersal of families throughout the landscape. Documentation by scholars Handy, Puku'i and Malo also suggest different means of egress because of the exchange system and the right people had to access resources.

As spatial delineation devices *'ai* and *wai* resources had clear impacts on resource and personal interactions, patterns of settlement, and accessibility. The specifics and various classifications of the tools used to delineate these spatial patterns are discussed in **Chapter VI. A Hybrid Design Guide**.

Mana [Sacredness]

Mana, a complex concept that bridged all aspects of Hawaiian living, was believed to be a divine force that influenced the importance of a person, place or object. In essence, mana represented all that was sacred, influencing people's relationships with each other, their environments, their homes, their authorities and their gods. The concept of *kapu*, meaning taboo, maintained the stability of *mana*, prohibiting cross-*mana* interaction. If *kapu* was broken, consequences were enforced, commonly resulting in death.

The origins of *mana* are unclear due to a lack of written documentation and the disjunctive nature of oral traditions. It can be agreed upon however, that the concept was tied to a form of social hierarchy, which began with their gods and ended with the lowest caste in Hawaiian society. Those higher, meaning those closer to divine powers, possessed greater *mana*, as did the objects and places associated with them. The amount of *mana*, each person, object and place contained, determined the conditions for interaction. A man with lesser *mana* was forbidden to interact or approach, another man, place or object with higher *mana*. If the lines of mana were crossed or *kapu* was broken there were sure consequences that followed. Examples of objects, places and people with high *mana* include but not limited to; *akua*, *wahi pana* [storied places] and *ali'i*.

Spatially the concepts of *mana* and *kapu*, established a form of Hawaiian proxemics, influencing the distances between people, objects and places. The representation of *mana* was done by both physical and ethereal means of delineation. The walls of *heiau* represented a tangible limit to a sacred space while the *kapu* areas near or around an *ali'i* represented an ethereal limit.

Mana had a strong influence on the way people interacted with spaces. Acknowledging *mana* as a spatial device can influence patterns of interaction, controlling the accessibility and use of spaces. By revisiting the concept of *mana*, even as a spatial concept there is the potential of reestablishing an important aspect of Hawaiian culture and protocol. The specifics and various classifications of the tools used to do delineate the use of *mana* is discussed in **Chapter VI. A Hybrid Design Guide**.

From Concept to Construct

All the aforementioned concepts show notable influences on the spatial character of traditional Hawai'i. By placing these influences into spatial topologies [based on the way they influence space], a system for indigenous based spatial delineation can be developed. The way each spatial concept is developed into spatial principles or constructs is discussed in **Chapter VI. A Hybrid Design Guide**.

Chart III.1.1 Major [Spatial Influencing] Concepts in Hawaiian Literature[8]

	Handy and Puku'i	Kamakau	Kanahele	Malo	NHLCA	Warther
Akua [D/I]	**[D]**	**[I]**	**[D]**	**[I]**	**[D]**	**[D]**
	All natural phenomena and resources were assumed forms of deities,governing peoples interaction with resources, site boundaries and community accessibility. [23]	The worship and recognition of site associated deities influenced the placement, construction and limits of spaces. [129-143]	The acknowledgement of the spiritual realm formed limits on places and resources. [35-58]	Hawaiians believed the land they lived on was a sibling, creating kin like relationships in space. Structures and spaces were determined by the religious affiliations of a place. [4-8, 118-124]	The spiritual beliefs and religious affiliations of resources influenced the way the land was used and the way people interacted in space. [15-16, 77-80, 85-86]	The recognition of deities in chants and dance suggest spatial relationships that form the limits and uses of spaces in the landscape. [27-32]
Mana [D/I]	**[I]**	**[I]**	**[D]**	**[D]**	**[D]**	**[D]**
	The recognition of a resource or persons power dictated the usage, accessibility and limits of resources and spaces. [41, 295, 320]	The power association of a site,person and even time, controlled the communities accessibility and interaction with certain cultural resources and sites. [14,18]	The sacredness of places, people and resources formed systems of proxemics that informed relationships in space. [35-58,188, 194]	Mana created social hierarchies, requiring the segregation of various social groupings and even sexes. It also controlled when, how and by whom a space or resource could be used. [53-72, 135-140, 160-176]	The concept of mana and formed systems of sacredness and privacy influencing the way spaces were used and delimited. [67-74, 77-80]	Mana informed the significances of axis, alignments and the resources used to delimit them. [Abstract, 28]
'Aina [D/I]	**[D]**	**[D]**	**[D]**	**[D]**	**[D]**	**[I]**
	The geography of the land influenced the locations of settlement and the way Hawaiians divided and delineated social, spiritual, and subsistence spaces. [284, 41-58]	Physical features of the land and sky determined the means for orientation, political division, settlement and accessibility. [3-10]	Hawaiians saw the land as a living resource endowing the qualities that gave it identity. Every feature was accounted for and recognized in the division of space. [176-178, 184-194]	Hawaiians gave name to the various natural features in the landscape and sky. Each label corresponded to unique geographic and celestial conditions. [16-18]	Hawaiians recognized the social and spiritual significances of the land, sky and sea. Each feature corresponded to unique spatial designations and relationships. [86-93]	Land features served as guides in the creation of boundaries that used their localities as alignment references. [28]
'Ai / Wai [D/I]	**[D]**	**[D]**	**[I]**	**[I]**	**[D/I]**	**[N/A]**
	The availability of food [and water] supply was the determining factor in the distribution and density of settlement patterns. [41-58,269,277-279]	Agricultural resources gave identity to various divisions in the landscape and influenced the way land was used. [23-50]	Ai and wai were the primary informants of economic interaction, influencing land division, land use, and access. [316-326]	Food and water resources informed a number of land division typologies, delimiting the means for community accessibility and social interaction. [16-18, 204-211]	Food and water resources provided the basis for the Hawaiian subsistence lifestyle. Patterns of settlement were based around their location and accessibility. [15-16, 85-86]	None
'Ohana [D/I]	**[D]**	**[N/A]**	**[D]**	**[I]**	**[D]**	**[N/A]**
	Families societal obligation to food production directed settlement towards food resource abundance. The interdependent relationships of families influenced patterns of accessibility and the divisions of personal space. [284-302]	None	References Handy and Puku'i [320]	Kin informed the social segregation of individual families as well as use of space within family compounds. [53-62]	The ohana was a socioeconomic unit with kin and religious ties to the landscape. This influenced patterns of settlement and interaction through a variety spatial relationships. [45-47, 67-70, 73-75]	None

[D/I] indicates whether constructs are taken directly **[D]** or inferred **[I]** from the literature, [N/A] indicates areas where it does not apply

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[8] Handy, E.S.Craighill and Puku'i, Mary Kawena. "Native Planters of Old Hawai'i: their Life, Lore and Environment." Honolulu, HI: Bishop Museum Press. 1972.
Kamakau, Samuel. "The Works of the People of Old." Honolulu, HI: Bishop Museum Press. 1976.
Kanahele, George. "Ku Kanaka Stand Tall." Honolulu, HI: University of Hawai'i Press. 1992.
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Warther, Francis. *Kumu Kahi*. Kilauea, HI: Ka Imi Na Au'ao o Hawai'i Nei Educational and Research Institute. 1996.

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Colonization

The advent of westernization brought great changes in the indigenous Hawaiian living system. Captain James Cook's arrival in 1778 opened the islands to the western world. Cook's exploits would lead to the introduction of entirely new systems of religious, political and economic protocol. All of these would greatly influence social and spatial character in the cultural landscape.

The Great Mahele

The most significant of the changes was the shift in land tenure systems, known as the *Great Mahele*. Prior to the arrival of foreigners, traditional Hawaiian politics and economics were based on a semi-feudal system of governance. *Maka'ainana* would occupy land held by *ali'i* in exchange for an agricultural-based levy and their allegiance in time of war. Under this system, tenure did not exist; instead commoners were tenants of *ali'i's* land, expected to make fair contributions to society.

In the 1840's, under the influence of foreign bureaucrats, King Kamehameha III was persuaded to abolish traditional Hawaiian land tenure in favor of the concept of private ownership of property [*Great Mahele*].[9] This would allow both native Hawaiians and foreigners to own the land that previously belonged to the Hawaiian monarchy.

As a means of fair distribution, King Kamehameha III, divided the land amongst three parties; the commoners, the chiefs, and the monarchy. Difficulties and a lack of knowledge in the land claim process resulted in a very small amount of land being distributed to a majority of the people [commoners]. A large portion went to the monarchy and chiefs, which would later be traded and then taken outright from them in the 1893 *Hawaiian Kingdom Overthrow* and 1898 *U.S. Government Annexation*.

The result of these rapid changes greatly affected the way native Hawaiians went about their lives. The privatization of lands resulted in large-scale displacement. Native Hawaiians no longer had access to the lands that provided the basis for subsistence lifestyle. This brought about dramatic changes in the social and spatial patterns of the people. Hawaiians were forced to abandon their subsistence lifestyles, move into urban areas and learn to fit within foreign economic and political systems.

DHHL

As an act of retribution for the illegal possession of lands and impacts caused by colonization, the US government enacted the *Hawaiian Homes Commission Act [HHCA]* in 1920. It was believed that by granting Hawaiians the lands that were taken as a part of the overthrow and annexation, the displacement and rapid decline of Hawaiian culture could be mitigated. The *HHCA* gave native Hawaiians 99-year agricultural homestead leases that provided them with self-sufficiency opportunities by means of subsistence land use.[10] Later, amendments would expand the scope of homestead awards to include the development of residential house lots.

[9] Fizpatrick, Gary. "Surveying the Mahele." Honolulu, HI: Editions Limited. 1995. [1]
[10] DHHL. "2007 Annual Report." Honolulu, HI: DHHL. 2007.

In 1959, the Department of Hawaiian Home Lands [DHHL] was established as the designated State program to administer the HHCA. While the DHHL looked to continue the rehabilitation process, issues of management and funding delayed the progress of the program's mandate. After years of delayed development and a mounting "waiting list" of those in line to receive land, a break-through occurred.

As an act of apology, the federal government allocated to DHHL over $600 million and 950 acres of federal lands under the *Hawai'i State Act 14* and the *Hawaiian Homes Recovery Act* in 1995.[11] The large sums of money provided DHHL with the opportunity to refocus their mandate and reconsider options for addressing a growing number of native Hawaiian applicants.

Since receiving this boost in funding the DHHL has focused its efforts on increasing awards given to native Hawaiians. Over the course of the last five years the DHHL has made notable advances, granting over 2,000 leases, which account for over 20% of the programs total 9,110 awards.[12] In the near future, the DHHL projects to complete another 4,000 units, 3,000 of which will be residential units in 16 planned suburbs.

The rapid advancements in land distribution have come at the cost of a number of concerning issues. One of the major concerns is how the design of DHHL developments help foster a sense of Hawaiian place and community. Much of what forms the basis for current DHHL developments occurs contrary to the Hawaiian culture. This can be attributed to foreign assimilation and a poor cultural nostalgia. "Hawaiian" themed developments, catchy branding and ornamental facades provide enough "culture" to convince potential owners these developments embody a Hawaiian sense of place [See Image 4.1]. One can speculate that these [owner] views are a result of; assimilation, a lack of alternative options, a lack of cultural knowledge and the pressure of time and finances.[13]

The process and methods the DHHL chooses to use for the development of communities does not help. One of the major advantages the DHHL has in its development of homesteads is their exemption from state and county zoning regulations. In spite of this, the DHHL chooses to design and develop almost all of their residential projects according to state and county standards. The DHHL chooses to adhere to these [state and county] standards because they feel regulations like roads, curbs and utilities provide the necessary health and safety systems. [See Image 4.2] Not only does choosing to use these systems move away from the integration of cultural design and planning methods, but it also creates delays in land awards and make for unnecessary development costs.

It is important that the current methods employed by DHHL be reconsidered. The following section reviews a few different residential cases and options provided by the DHHL, highlighting the need for a new system of design and development.

[11] Ka 'Ohana o Kahikinui. *A conceptual land use plan for the ahupua'a of Kahikinui.* Maui, HI: Ka 'Ohana o Kahikinui. 1993. [17]
[12] DHHL. "2007 Annual Report." Honolulu, HI: DHHL. 2007.
[13] This opinion is based on my experience living and working with native Hawaiians.

Image 4.1 *Typical DHHL House*[14]

An example of one of the many houses that DHHL claims to create a Hawaiian sense of place.

Image 4.2 *Typical DHHL Development*[15]

The image above is an example [DHHL Kapolei] showing how infrastructure governs the location and creation of DHHL communities.

[14] DHHL. "Kanehili Kapolei." Web. September 2009. <http://Hawaii.gov/dhhl/>
[15] DHHL. "Kanehili Kapolei." Web. September 2009. <http://Hawaii.gov/dhhl/>

Image 4.3 *Typical DHHL Housing Development*[16]

Kapolei House Lots.

Image 4.4 *Suburb Comparison*[17] [18]

On the left is an image of a suburb in Las Vegas Nevada, while the right is a DHHL residential development in Kapolei. The layout and plans for each development could easily be placed in the opposing setting.

[16] DHHL. "Kanehili Kapolei." Web. September 2009. <http://Hawaii.gov/dhhl/>
[17] Ulybug. "Vegas Subub." Web. Grand Canyon by Helicopter. September 2009. <http://www.flickr.com/photos/ulybug/58183800/>
[18] Pacific Buisness News. "DHHL Kapolei." Web. September 2009. <http://pacific.bizjournals.com/pacific/stories/2006/10/02/story1.html>

Cases

DHHL's land serves as the basis for the application of this project's indigenous design guide. To understand how this project's new methodology improves the current design and development system, there is need to review a few cases that represent the way DHHL homesteads and house lots are currently being designed.

Suburban house lots and agricultural homesteads are the two most dominant forms of DHHL land distribution. Each is a land division occupied by families with the latter being more associated with agriculture production. While the functions and uses may differ between the two, methods used to determine their patterns and relationships in the landscape fall back on similar concepts. These include; infrastructure, accessibility and land division efficiency. The way each influences the design of a DHHL suburb and subsistence developments is discussed below.

DHHL Suburbs

A majority of DHHL residential awards are 5,000 – 10,000 sqft. house lots located within large subdivisions. The relative proximity to infrastructure [road/water/electricity] networks play a large part in determining the location of developments. At the community scale, the efficiency of lot division and common accessibility play primary roles in determining the way each parcel is laid out. Both of these methods occur arbitrary to the cultural setting, focusing more on matters of western-based economy and tenure [See Image 4.3].

Although, exempt from state and county development regulations [which require the aforementioned design considerations], DHHL chooses to let western-based guidelines dictate the design process. Little cultural consideration[19] goes into the design of areas designated for residential house lots and almost no cultural consideration influences the site plan of a development. As a result, almost all of the DHHL residential developments are indistinguishable from suburban communities located in the mainland U.S. [See Image 4.4].

Anahola House Lots

The residential subdivisions at Anahola, Kaua'i, are examples of the DHHL's conformity to western development methodologies. The design of the existing 359 house lots are based on the proximity to infrastructure networks [primarily water and roads] and the ease of access to areas of economic productivity.[20] The grid-like stacking of standardized parcels maximizes land awards, while secondary roads form the basis for house lot distribution. The result is a large amount of house lots being created within a relatively small area of land.

Whlie the expansive 4,228-acre site provides an abundance of natural resources that enable easy off-grid living, the dependency on the infrastructure network and the access to western economic system controls the location and spatial layout of the

[19] Cultural resource areas and sites are considered in community master plans but their placement appears to governed by the land and soil conditions [which are often not suitable for building] than is their accessibility and relationship to the community.
[20] DHHL. "2007 Annual Report." Honolulu, HI: DHHL. 2007.

house lots. Almost all of the current parcels fall within a 1/8-mile radius of the island's primary highway. 1,281 proposed house lots continue the trend, extending outward another 1/8-mile radius from the current residential developments. This keeps nearly all residential development within a 1/4-mile radius of the highway, supporting a system dependent on transit and off-site resources [See Image 4.5].

Cultural sites are pointed out in the regions master plan, yet there is no significant integration. Instead, cultural resources are difficult to access due to the design of house lots [the stacking of lots limits the community access to cultural sites and resource by blocking public thoroughfare]. The location of the highway has a much stronger influence in the design of the community than the resources that give the place its cultural identity [See Image 4.5].

All other residential subdivisions created by the DHHL follow the same pattern of development. Infrastructure and efficiency of land division guide the design of the location of house lots, while the access and integration of cultural resources are given a backseat in the design process. This creates a dependency on the foreign system and limits the role of culture in native Hawaiian's lives. DHHL subsistence homesteads are an attempt to rectify these issues and provide native Hawaiians a lifestyle similar to their ancestors. Unfortunately most DHHL subsistence efforts fall short, resulting in a return to foreign methods for land division and use. These are discussed in the next section.

DHHL Subsistence Homesteads

The subsistence homesteads are a part of the DHHL's initiative to integrate agricultural practice with the distribution of homelands. Of the land awards given by the DHHL these most closely resemble the traditional Hawaiian way of life. Although most encourage self-sufficiency and a decreased dependency on a foreign-based living system, the way these land areas are designed still relies on western methods of land distribution, accessibility and use. The subsistence homestead plans for Keaukaha and Anahola are two different examples of communities that follow these patterns.

Keaukaha, Hawai'i [Kings Landing]

The subsistence homestead plan for Keaukaha, Hawai'i was a community response to vacant DHHL lands. Seeing that land set aside for native Hawaiians wasn't being used, a group of families, without the consent of the DHHL, settled there. They then formed a community organization called Malama Ka 'Aina Hana Ka 'Aina [MAHA] that proposed new use for the land. Their plan called for a subsistence land use, where occupants could live a self-sufficient lifestyle depending on the land and site resources to sustain themselves. MAHA saw the opportunity to partake in a lifestyle that reflected Hawaiian heritage, while making use of DHHL lands left idle. Together they formed a plan that outlined guidelines and a management policy based on community involvement.

Their initial settlement had no formal layout. Vacant DHHL land formed the relative limits of the settlement and personal areas. Families were dispersed across the 1350 acre site with density developing around the unique anchiline ponds [which were valuable water resources]. To formalize tenure and make way for future development at the site, DHHL proposed a grid like distribution of lots that ran perpendicular to the site's only road. In

doing so, certain families gained private rights to the anchiline ponds that fell within their assigned lots [See Image 4.9]. This resulted in an unfair distribution of resources creating dissension within the community. These issues are still relevant at Keaukaha and there is yet to be a solution that addresses the privatization of resources.

Anahola, Kaua'i

Unlike the Keaukaha plan, the creation of subsistence homesteads at Anahola was a part of the region's initial master plan. Up until the later half of the 20th century, a majority of the lands at Anahola were used for plantation-based agriculture. Rich soil and abundance of water resources made the ideal setting for agriculture production.

In keeping with it's rural character, the master plan called for homesteads where residents could maintain an agricultural and subsistence-based lifestyle. However, the design and planning that determined the location and organization of the subsistence homesteads, was more dependent on lot division and infrastructural accessibility than about maximizing the agricultural and cultural resource base.

Contrary to the cultural [subsistence] practices, which depended heavily on a site's water resources, almost all the current subsistence homesteads at Anahola are located outside a 1/8-mile radius of any natural water resource. The layout of each homestead further inhibits community accessibility, forming a rigid barrier of property boundaries between large portions of the community [See Image 4.7]. The result is subsistence homesteads that are not self-sufficient and depend on foreign-based infrastructure [water, roads, electricity] to support their agricultural practices. Thus the subsistence homesteads appear to be almost the same thing as the residential house lots, difference being the size of the lot.

Restoring Identity

The current methods for the development of residential house lots and agricultural homesteads present issues in the way the DHHL approaches the design of communities. The current issues highlighted by both cases include:

- *Dependency on Infrastructure Networks [Roads/Electricity/Water]*
- *Proximity / Accessibility to Economic Centers*
- *Efficiency of Land Division [Ease of Development and Parcel Maximization]*
- *A lack of Cultural Integration in the Design Process*

By placing a strong cultural emphasis on the design of the DHHL homestead communities and limiting the influence of foreign design methods, there are ways of reshaping the existing process for design and development. Both subsistence homestead plans at Keaukaha and Anahola show how the efficiencies of foreign-based land division, infrastructure and accessibility can potentially disrupt attempts to integrate culture into the development process. Rethinking the tools and methods for the division and distribution of land, presents the opportunity to move towards more culturally-centered forms of design and development. The next chapter discusses how concepts in Hawaiian culture can be used to refocus the design and development process for native Hawaiian communities.

Image 4.5 *Anahola Residential House Lots Current and Proposed*[21]

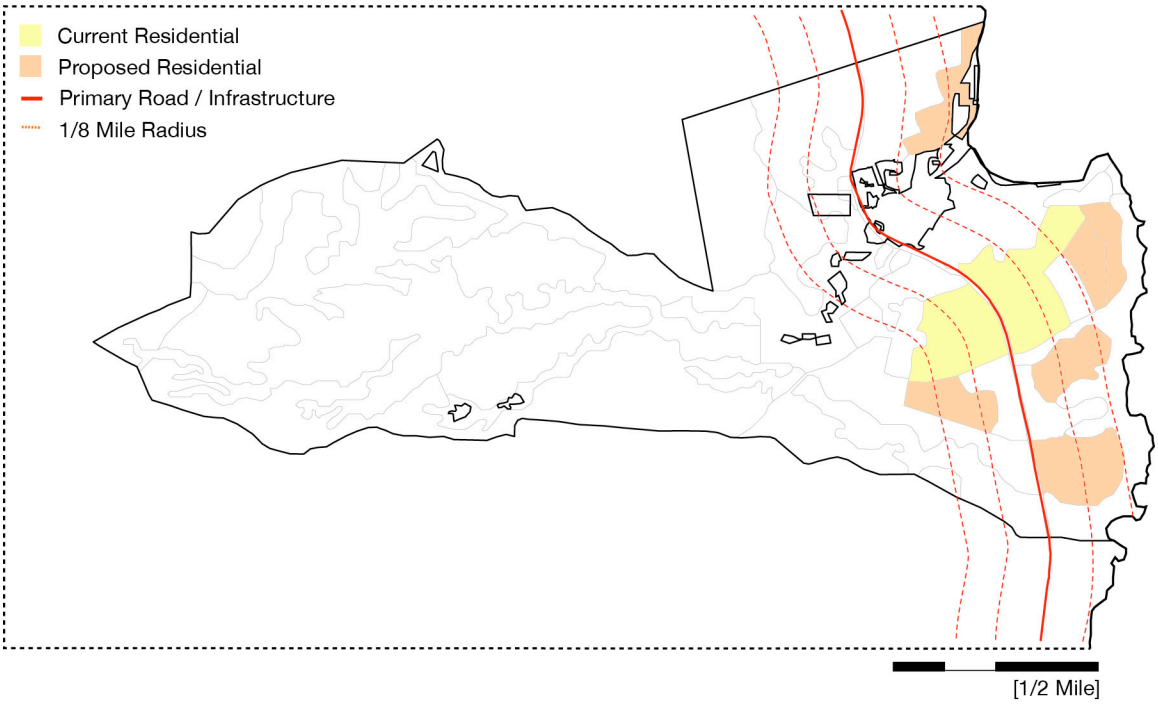


Image 4.6 *Anahola Residential House Lot Infrastructure Proximity*[22]

[21] Hawai'i State GIS. Office of Planning, State of Hawai'i. GIS. September 2009. <http://www.state.hi.us/dbedt/gis/download.htm>
[22] Hawai'i State GIS. Office of Planning, State of Hawai'i. GIS. September 2009. <http://www.state.hi.us/dbedt/gis/download.htm>

Image 4.7 *Anahola Subsistence Homesteads Current and Proposed*[23]

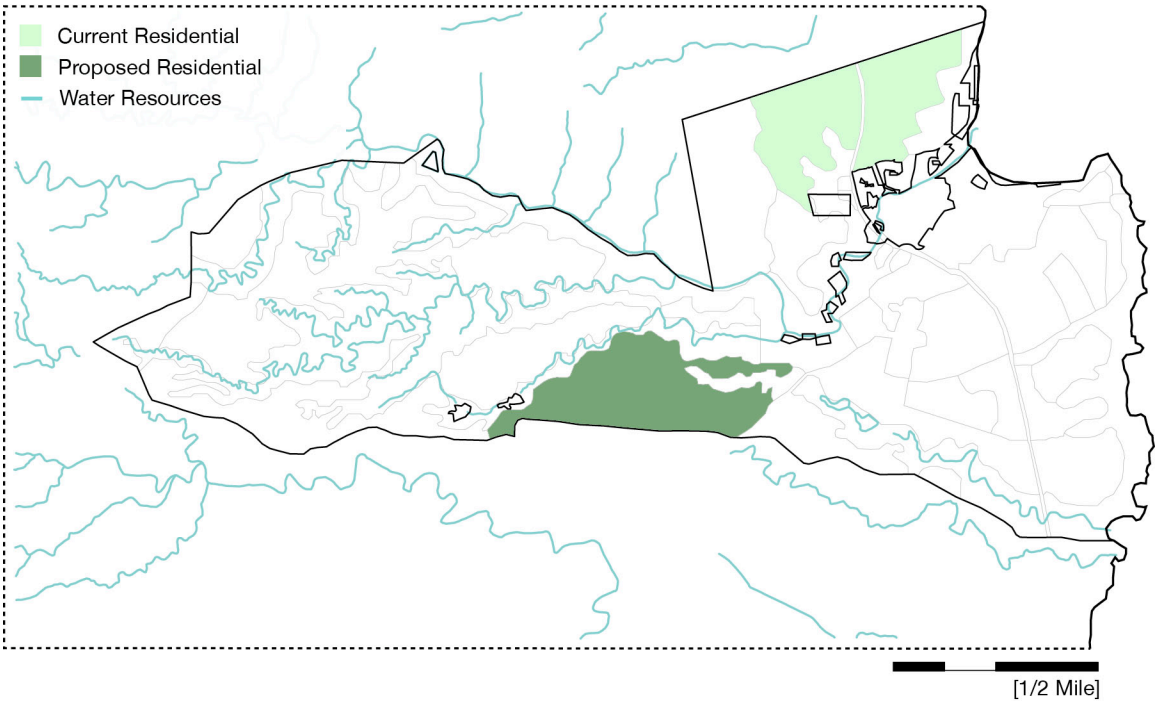
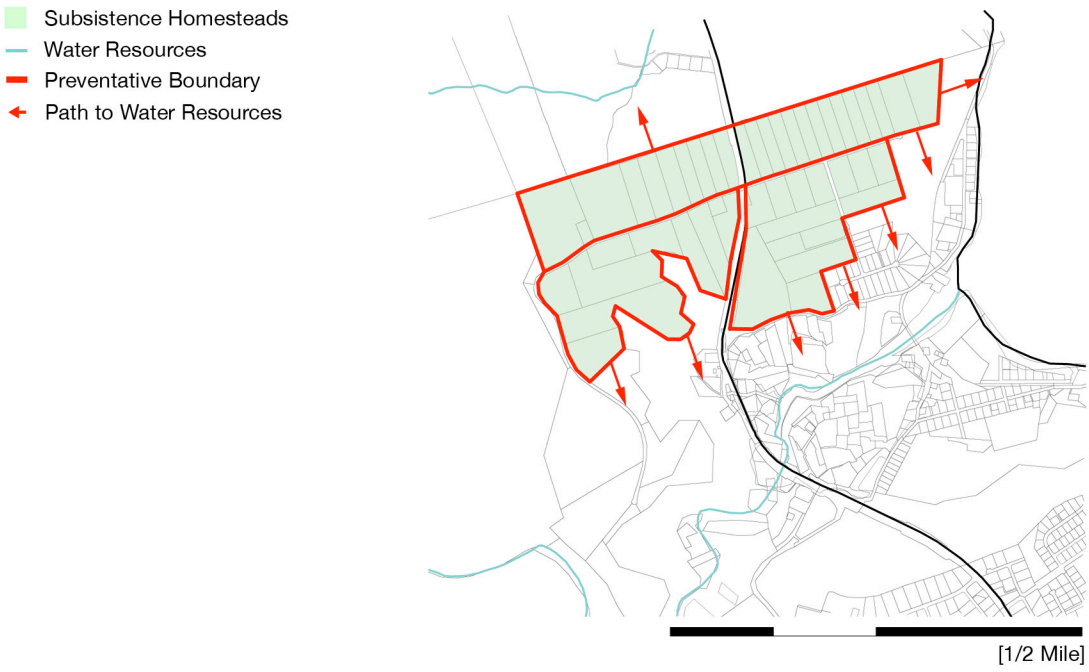


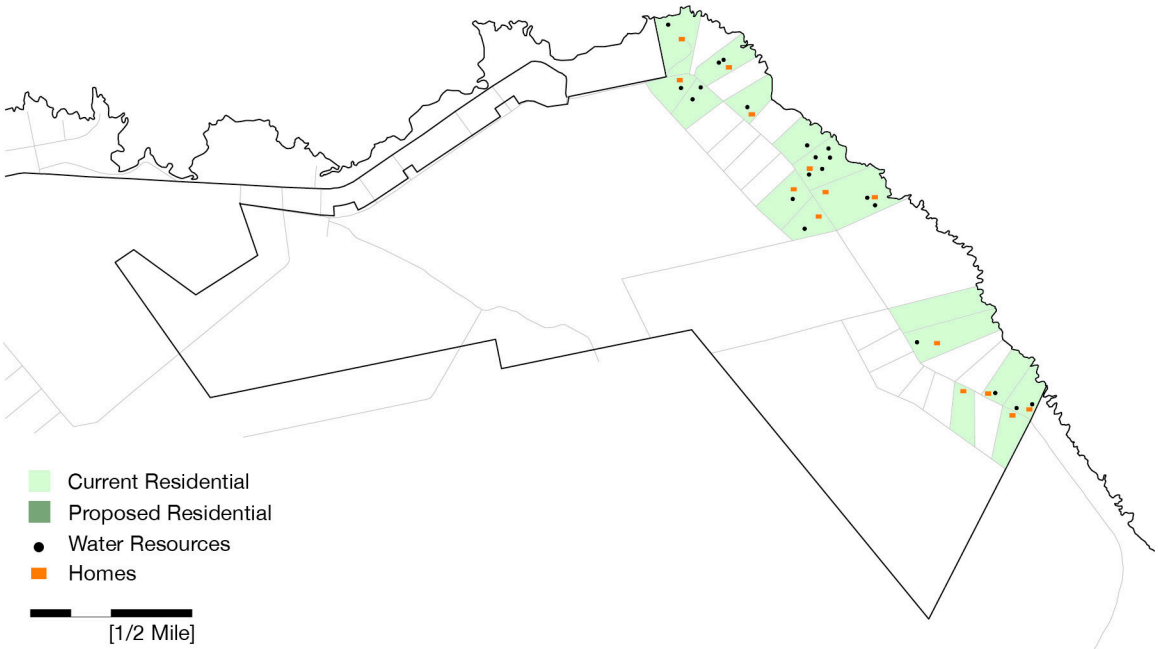
Image 4.8 *Anahola Subsistence Homesteads Resource Accessibility*[24]



[23] Hawai'i State GIS. Office of Planning, State of Hawai'i. GIS. September 2009. <http://www.state.hi.us/dbedt/gis/download.htm> , Belt, Collins and Associates. Anahola-Kamalomalo and Moloaa development plan for Department of Hawaiian Home Lands. Honolulu, HI: The Associates. 1987.

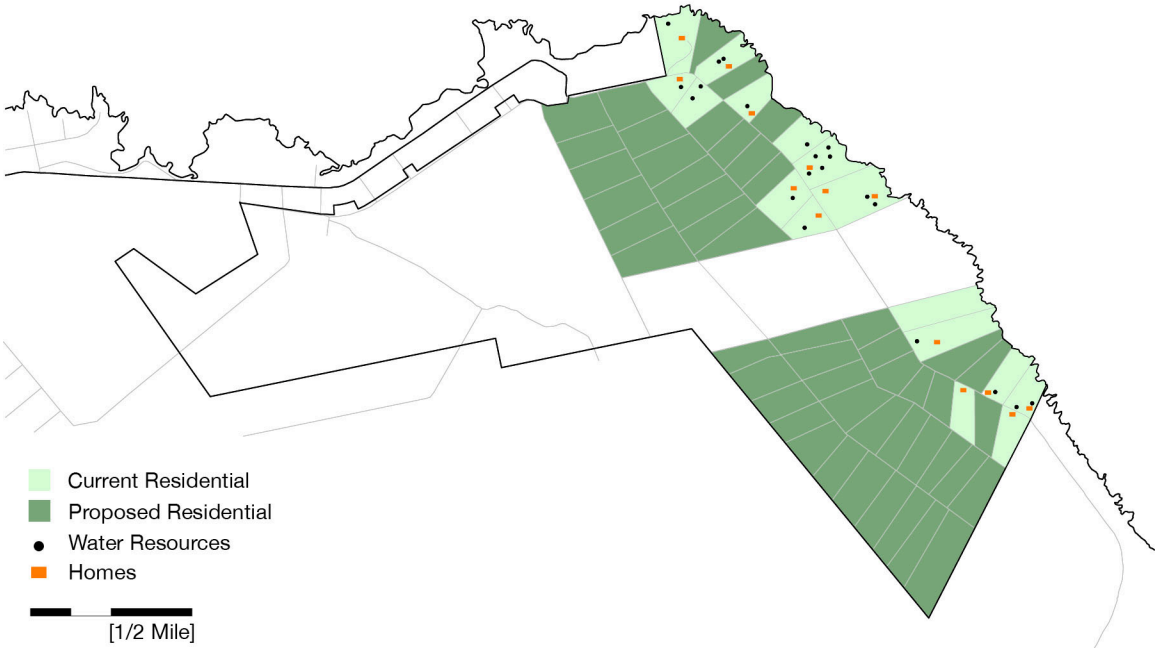
[24] Hawai'i State GIS. Office of Planning, State of Hawai'i. GIS. September 2009. <http://www.state.hi.us/dbedt/gis/download.htm>

Image 4.9 *Keaukaha Tract II Land Divisions*[25]



This image shows the natural pattern of settlement [homes and resources] as well as the DHHL's attempt to divide the land for personal tenure.

Image 4.10 *Keaukaha Tract II Land Divisions Proposed*[26]



This image shows the DHHL's plans for lot distribution at Keaukaha. Note the rigidity of the plan and the difficulties that might arise given the limited access to water resources.

[25] Palapala Ink. Susbistence Homesteads: A community management plan for the DHHL Keaukaha Tract II. Honolulu, HI: Malama Ka 'Aina Hana Ka 'Aina. 1987.

[26] Palapala Ink. *Susbistence Homesteads: A community management plan for the DHHL Keaukaha Tract II.* Honolulu, HI: Malama Ka 'Aina Hana Ka 'Aina. 1987.

V. A HYBRID DESIGN GUIDE [PLACE FRAME IDENTIFICATION]

Indigenous [Spatial] Logic + Foreign Delineation Tools *[Image V.1.1]*

Native Hawaiians shared a unique relationship with the environments they inhabited. Every aspect of a place, both physical and ethereal, gave identity to the landscape, explaining its history, the terms for interaction, and the placement and patterns of objects, land uses and structures occurring within them. As shown in **Chapter IV**, today's approach to design and development in Hawai'i depends heavily upon foreign systems in guiding the land and homestead planning process. The framework used to do so results in the culturally-uniformed creation of space. Although there is value in the foreign system, the lack of regard for the culture in which it is placed raises questions as to its appropriateness. The intent of this guide is to develop a hybrid [indigenous + foreign] design methodology that provides a way of drawing out spatial attributes of a place's cultural resources, while adapting tools used in current systems, to create a new, more culturally sensitive methodology for delineating space and objects placed in it.

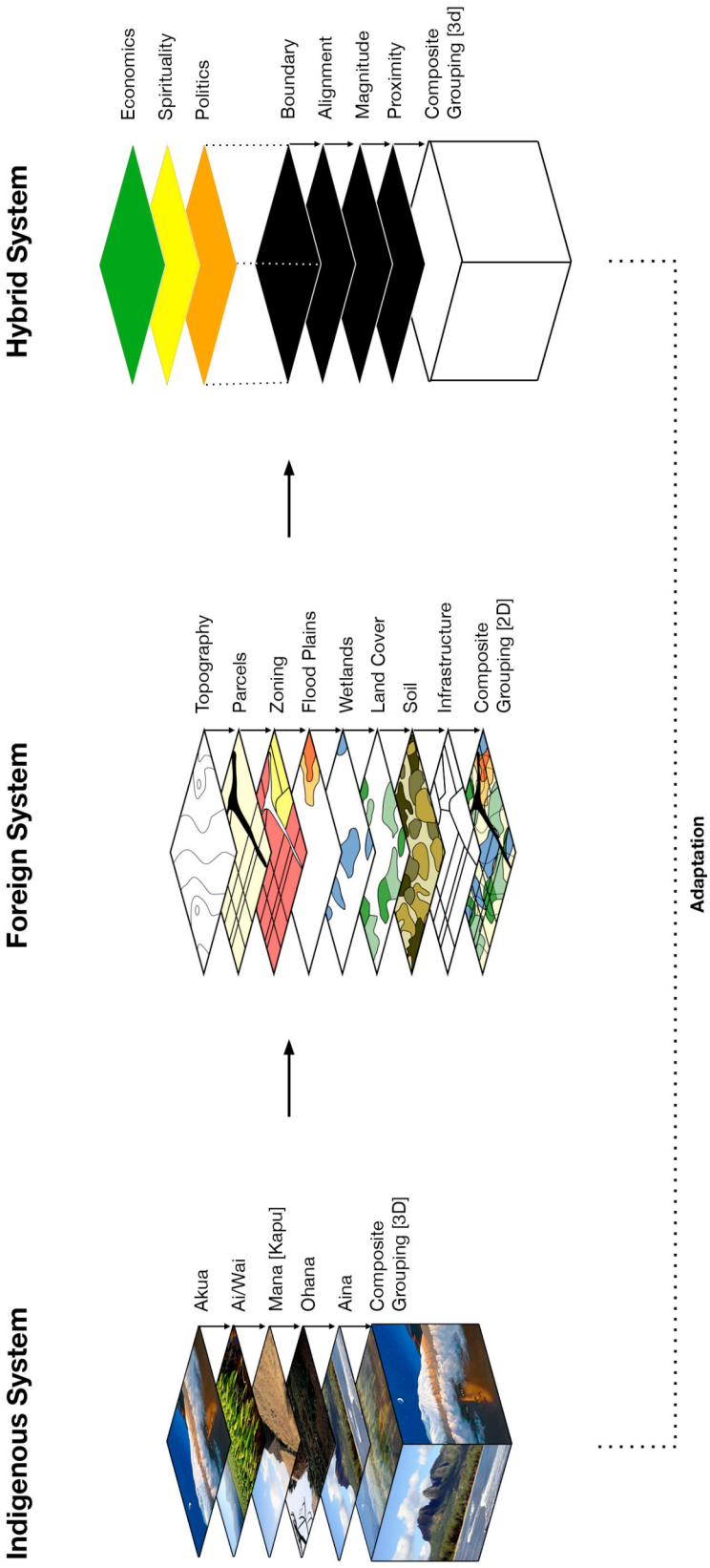
For the purpose of this project, the term *Indigenous [Spatial] Logic* is to be identified as the systematic development of spatial principles transposed from *Cultural Resources*. *Cultural Resources* are to be identified as all the elements and sites, both physical and ethereal, that are responsible for the cultural identity of a place. *Foreign Delineation Systems* are to be identified as the spatial designation tools used in the current design and development processes [i.e. GIS topologies]. The combination of these [*Indigenous Spatial Logic* and *Foreign Delineation Systems*] is to be identified as a *Hybrid System.* The following chapter discusses how indigenous logic can be translated into hybrid sets of spatial principles and then be used to create a new framework for development. A collective guide that shows notable Hawaiian scholars views on each construct ends the chapter.

Cultural Resource Identification and Principles *[Table V.1.1-2]*

For every relationship in indigenous Hawaiian space, there were distinct cultural resources that allowed one to understand the conditions for interaction. Creating contemporary system for homestead design and development requires identification and classification of the various cultural resources that have given form to indigenous places and the spaces and objects within them.

To simplify the process of translating cultural concepts to cultural constructs, this project proposes a series of groupings that organize cultural resources according to, their physical and ethereal attributes, their areas of social influence and their influence on relationships in space. The result of these groupings is a guideline that enables one to identify cultural resources and represent their spatial influences in the design of new developments. Each of the major resource classifications are defined by three groupings.

Diagram V.1.1 The Hybrid Design Guide Development Process



Cultural Resource Typology [1]

The first classification group organizes the varying physical and ethereal attributes of cultural resources by means of three sets; *Geographic, Celestial,* and *Constructed*. Organizing resources according to the aforementioned sets is intended to simplify the broad range of resource groupings. As **Chapter III** indicates, the range of resources encompassed everything from the stars in the sky to the rocks in a field. Differentiating each resource according to respective physical and ethereal grouping helps determine the basic spatial attributes of a wide range of cultural resources.

Cultural Resource Typology [2]

The second classification group organizes cultural resources according to their various realms of social influence, which include; *Economic, Religious* and *Political* areas. These groupings are a result of various areas of influence displayed by the concepts in **Chapter III**. The five groups in **Chapter III** can be reduced to three areas of influence, simplifying the amount of variables that need to be taken into account. Similar to the first group, differentiating each resource accordingly helps distinguish its influence spatially.

Spatial Construct Topology

The third and last classification group organizes the various spatial constructs found in the traditional setting according to a series of spatial principles. These include; *Delimitation, Magnitude, Proximity* and *Alignment.* Each set is an adaptation of the various spatial relationships and patterns displayed by the cultural concepts in **Chapter III**. The behavior of each spatial principle depends on the preceding classification sets [*Cultural Resource Typology 1* and *2*]. The information produced by this group serves as the major form giver to the project's proposed design and development methodology.

Current design methods clearly lack the acknowledgement of cultural resources. In almost all cases shown by the DHHL, cultural resources have no significant impact on the development of homestead communities. By identifying and organizing resources according to these guides, there is the opportunity to bridge the gap between cultural setting and conventional [foreign based] design methodologies. The remainder of this chapter provides guides for the identification of cultural resources, constructs and their respective spatial designations.

Table V.1.1 Cultural Resource Identification[27]

To use cultural resources as guides in the development of a new spatial framework, it is important to first establish their existence relative to a site. Select from the following list all the cultural resources associated with a potential area for development.

Identification	Existent	Absent
Geographic		
Objects [trees, rocks, etc.]		
Object 1	x	x
Object 2	x	x
Object 3	x	x
Groupings of Objects	x	x
Projections [hills]	x	x
Caves	x	x
Mountain Peaks	x	x
Ocean	x	x
Streams / Ponds	x	x
Springs / Wells	x	x
Observation Area	x	x
Sporting Area	x	x
Celestial		
Constellation Paths[28]		
Major	x	x
Minor	x	x
Solstices	x	x
Constructed		
Dwelling [Kauhale]	x	x
Temple/Shrine [Heiau]	x	x
Trails / Paths	x	x
Burial Area	x	x
Constructed [Other]		
Ahupua'a	x	x
'Ili	x	x

Note: x indicates potential for selection

[27] Partially adapted from: Kelley, Panaewa, Minerbi, Luciano, Davianna McGregor, and Jon Matsuoka. "Phase III. Native Hawaiian Access Rights Project Recommendations for SMA Rules and Process." Honolulu, HI: University of Hawai'i. 2002.

[28] Determining constellation paths requires extensive research into the significant star's in the Hawaiian belief system and then mapping their individual paths. Due to time constraints, this project will not observe these elements. Using these as design tools requires the user to follow the same process used in mapping the sun path and it's solstices.

Table V.1.2 Cultural Resource Identification[29]

The social character of each cultural resource governs its role as a spatial delineation device. From the following list select the association; *Economic, Spiritual,* or *Political*, each resource would have had in the traditional setting. More than one association is possible.

Identification	Economic	Spiritual	Political
Geographic			
Objects [trees, rocks, etc.]			
Object 1	x	x	x
Object 2	x	x	x
Object 3	x	x	x
Groupings of Objects	x	x	x
Projections [hills]	x	x	x
Caves	x	x	x
Mountain Peaks	x	x	x
Ocean	x	x	x
Streams / Ponds	x	x	x
Springs / Wells	x	x	x
Observation Area	x	x	x
Sporting Area	x	x	x
Celestial			
Constellation Paths[30]			
Major	x	x	x
Minor	x	x	x
Solstices	x	x	x
Constructed			
Dwelling [Kauhale]	x	x	x
Temple/Shrine [Heiau]	x	x	x
Trails / Paths	x	x	x
Burial Area	x	x	x
Constructed [Other]			
Ahupua'a	x	x	x
'Ili	x	x	x

Note: x indicates potential for selection

[29] Partially adapted from: Kelley, Panaewa, Minerbi, Luciano, Davianna McGregor, and Jon Matsuoka. "Phase III. Native Hawaiian Access Rights Project Recommendations for SMA Rules and Process." Honolulu, HI: University of Hawai'i. 2002.

[30] Determining constellation paths requires extensive research into the significant star's in the Hawaiian belief system and then mapping their individual paths. Due to time constraints, this project will not observe these elements. Using these as design tools requires the user to follow the same process used in mapping the sun path and it's solstices.

Boundary [Table V.2.1]

Boundary delimitation recognizes the importance of identifying the limits of cultural resources. Indigenous Hawaiians were highly aware of the resources and boundaries in the places they inhabited. As author Kanahele reminds, nearly every object in the traditional setting was recognized, helping form the identity of a place.[31] This can be seen in the extensive and descriptive Hawaiian place names, dances, chants and folklore. Identifying each of the resources and the limits that defined them is the first step in translating cultural spatial concepts to the proposed system for development.

Although sources do not directly state it, it can be inferred that the limits or boundaries or resources dictated the patterns for human interaction. The varying physical and ethereal spatial character of resources requires multiple means of delimitation. In evaluating the way resources and spaces were identified in the traditional setting, three forms of delimitation are apparent. These include; *Fixed Limits, Calculated Limits*, and *Ambiguous Limits.* Classifying each resource according to their respective limit typology provides the first guide for organizing interactions in space. The role each of these classifications plays in the proposed system for spatial delineation is explained in the next section titled; *Alignment*.

Fixed Limits

Fixed limits represent boundaries that were clearly defined either by stationary objects, constructed barriers and/or continuous markings. These were limits that could separate one resource from another by a clearly defined boundary. Examples included; rocks, fenced spaces [some agricultural clearings] and walled structures [kauhale and heiau]. Cultural resources with fixed limits clearly differentiated objects and spaces while controlling accessibility and interaction.

Calculated Limits

Calculated limits represent boundaries that were defined, yet lacked stationary elements to separate one resource from another. The limits of these resources had interpretable and/or imprecise boundaries. Examples of these included; resources like trees, groupings of trees, ridgelines, shorelines and even shadows. *Ahupuaʻa* [political land divisions] and *ʻili* [family land divisions] are likely the most notable resources that used calculated limits. Cultural resources with calculated limits differentiated objects and spaces yet the boundaries used to do so were often interpretable and imprecise.

Ambiguous Limits

Ambiguous limits represent boundaries that were vague and undefined. A large part of resources with ethereal associations fit into this category, given their intangible nature. While the limits of these resources were unclear they still controlled accessibility and interaction, giving them an important role in the division of spaces. Examples of these are found in some land divisions [*wahi pana*, *wao akua*] and zones [i.e. *maʻukele*, *wao koa*], the various regions of the sky [i.e. *lewa*, *ka hoʻokuʻi*] and the divisions of the ocean [i.e. ʻae kai, *kai kohala*].

[31] Kanahele, George. "Ku Kanaka Stand Tall." Honolulu, HI: University of Hawaiʻi Press. 1992

Table V.2.1 Cultural Resource Boundary[32]

Every cultural resource maintains a boundary that defines the space it occupies. Observing the range of cultural resources used by native Hawaiians, there are three apparent *Boundary* classifications. These include; *Fixed* [marked or constructed], *Calculated* [unmarked yet apparent] and *Arbitrary Variable* [unmarked and unclear]. The following list to classify each cultural resource *Boundary* accordingly.

Boundary	**Fixed**	**Calculated**	**Arbitrary**
Geographic			
Objects [trees, rocks, etc.]			
Object 1	x	x	x
Object 2	x	x	x
Object 3	x	x	x
Groupings of Objects	x	x	x
Projections [hills]	x	x	x
Caves	x	x	x
Mountain Peaks	x	x	x
Ocean	x	x	x
Streams / Ponds	x	x	x
Springs / Wells	x	x	x
Observation Area	x	x	x
Sporting Area	x	x	x
Celestial			
Constellation Paths[33]			
Major	x	x	x
Minor	x	x	x
Solstices	x	x	x
Constructed			
Dwelling [Kauhale]	x	x	x
Temple/Shrine [Heiau]	x	x	x
Trails / Paths	x	x	x
Burial Area	x	x	x
Constructed [Other]			
Ahupua'a	x	x	x
'Ili	x	x	x

Note: x indicates potential for selection

[32] Partially adapted from: Kelley, Panaewa, Minerbi, Luciano, Davianna McGregor, and Jon Matsuoka. "Phase III. Native Hawaiian Access Rights Project Recommendations for SMA Rules and Process." Honolulu, HI: University of Hawai'i. 2002.

[33] Determining constellation paths requires extensive research into the significant star's in the Hawaiian belief system and then mapping their individual paths. Due to time constraints, this project will not observe these elements. Using these as design tools requires the user to follow the same process used in mapping the sun path and it's solstices.

Alignment [Table V.3.1-2]

Alignment played a major role in the delineation, orientation and function of indigenous spaces. With no tangible [written] mapping system, the indigenous Hawaiians identification of space relied on the positioning of one resource in relation to another. This is evident in nearly every aspect of society. From navigation, to religion, to politics, the alignment of resources helped give direction, order and form to society. Hawaiian Archaeoastronomer and Architect, Francis Warther, has done extensive research into the alignments used in the traditional Hawaiian living system. His work shows that alignment of resources had a significant impact on the location and orientation of structures and the delineation of spaces.[34] Notable Hawaiian scholars, such as Handy, Pukuʻi, Malo and Kanahele also make note of the usage of alignment in delineating religious, political, economic, and personal boundaries.

To represent this long practiced system of spatial ordering, the project looks at alignment from two standpoints; *Divisional Alignment* and *Functional Alignment*. The first set creates axes with different divisional properties based on the boundaries of resources being aligned. The second set determines how each axis influences spaces function. The rules for this set are based on the social affiliations of resources being aligned. The origins and details of each grouping are described in additional detail below.

Divisional Alignments

In the traditional setting the alignment of resources was heavily depended upon to create the boundaries of spaces. Almost every identifiable resource had the potential of being a point that defined a divisional axis. Examples of how resources were used to create these divisional axes and spaces include; the alignment of trees, rocks and posts to demarcate personal and economic spaces [*ʻili*], the alignment of ridgelines, peaks and alters to demarcate political spaces [*ahupuaʻa*], and the alignment of stars, and sun solstices to demarcate religious and sacred spaces [*heiau*].

A resources ability to divide space depended on the extent of its boundaries. In other words, the axis created between two resources was only as specific as the elements used to define it. As an example, the divisional axis formed between a ridge and *ahu* had much less clarity than the boundary formed by two posts or trees. This project proposes divisional alignment axis based on the various resources boundary typologies, which include; *Fixed, Calculated* and *Arbitrary*.

Determining axis types according to the aligned resources boundaries enables the design process to determine various levels of interaction in a space. Ambiguous spaces are less defined, thus the interaction level through and in that space is considerably more open and exposed than a space defined by a fixed axis, which has much clearer bounds. This project will use each divisional alignment axis to define how and where spatial relationships in a general area should be higher, and where personal boundaries [tenure] are more appropriate. It is also important to note that alignments are to be based on the axis formed from the relative center of each respective resource.

[34] Warther, Francis. *Kumu Kahi*. Kilauea, HI: Ka Imi Na Au'ao o Hawai'I Nei Educational and Research Institute. 1996

Fixed

Fixed alignments are based on the limits created by relationships of two fixed resources. Examples of these in the traditional setting include instances where resources like two *ahu* [alters] were aligned to delineate a sacred area or when two *pou* [posts] were aligned to delineate someone's *ʻili*. The axes formed by fixed alignments are to be used to demarcate defined personal boundaries.

Calculated

Calculated boundary alignments are based on the limits created by the relationship of resources that were defined yet lacked precise boundaries, meaning the boundary was open to a greater level of interpretation than the axis formed by fixed alignments. Examples of these included instances where the rising point of a solstice formed an axis that was used for development or when an *ahu* [fixed resource] and a *kuahiwi* [calculated resource] were aligned to form the limits of an *ahupuaʻa*. The axes formed by calculated alignments are to indicate permeable personal boundaries [boundaries that allow community accessibility].

Ambiguous

Ambiguous boundary alignments are based on the limits created by the alignment of resources that were unclear and undefined. Examples of resources used in the definition of ambiguous alignments included land divisions like *wao akua*, formed by *puu* [protuberances or hills] and *kualono* [ridgeline] or the alignment of *mala* [groves] and *kula* [pasture lands] used to define *ʻili*. The axes formed by ambiguous alignments are likely to be used in cases where the separation spaces were less about precision and more about generality. Boundaries formed by ambiguous alignments are to be considered as divisional limits, although they are not substantial enough to define a personal spaces.

Functional Alignments

The primary function of alignments in the traditional setting appeared to be associated with the various social facets in society [i.e economics, religion, politics]. Some resources had a greater significance in regard to a specific social group, thus influencing their role in the creation of it's groupings spatial relationships and limits. As an example, certain stars were associated with certain deities, influencing their role as religious spatial delimiting devices. Similarly, the alignment of specific plants and natural features had a stronger association with the economic and subsistence organization of the people, thus influencing the division of those types of spaces.

Translating these occurrences into a system for spatial delineation requires identification of the various social affiliations of resources. Depending on the social grouping, there are a variety of ways specific resource alignments can control spatial function. This project proposes three simplified ways of representing various alignment groupings.

The resource typology of the two resources being aligned will determine the axis type and potential spatial function. This creates three potential alignment typologies; *Economic, Religious,* and *Political*. Each axis formed by the alignment of the resources will control the function of space according to the qualities of each resource.
For example the axis formed by two religious resources will apply specific religious guidelines, whereas the axis formed by a political and economic resources will apply to both guidelines. The criterion for each case is described below.

Economic Alignment

Economic alignment responds to the economic characteristics of a resource. The economic areas function in this project are as areas of habitation and agricultural production, thus the axes formed by these resources serve in the delimitation of agricultural and habitation areas.

Religious Alignment

Religious alignment responds to the religious characteristics of a resource. The religious areas function in this project serve as privatized areas, thus the axes formed by these resources serve in delimiting areas of restriction.

Political Alignment

Political Alignment responds to the political characteristics of a resource. The political areas functioned as a form of localized tenure, thus the axes formed by these resources serve in delimiting space. The function of these spaces should be considered as a decision of the communal body.

Cross Alignment

Cross alignment refers to the alignment of resources that have different influences on the social character of spaces. As an example, political and religious resources can be aligned and the function of the resultant axis can take on either of the two divisional qualities. This is an adapted rule intended to recognize the relationships of all resources and use them in the creation of spaces that are in one way or another associated with the indigenous culture.

As the examples and rules illustrate, alignments served a key role in spatial delineation and space. The levels of a resource's physical and ethereal magnitude served in determining the level of influence an axis had, while the boundaries of each resource determined the level of precision it had in delimiting space. Addressing each of the characteristics of alignment provides useful spatial guides for spatial delineation.

Table V.3.1 Cultural Resource Alignment: *Boundary Alignment*

Boundary Alignment serves as a guide in the delineation and orientation of space. The type of axis used to delimit space is dependent in part on the boundary typology of each resource being aligned. Select from the following list each individual resource boundary and the resulting alignment typology. Each axis type corresponds to the lesser of the two resources being compared.

Boundary Alignment	**Fixed**	**Calculated**	**Arbitrary**
Resource [1]	x	x	x
Resource [2]	x	x	x
Resulting Axis	x	x	x

Note: x indicates potential for selection

Table V.3.2 Cultural Resource Alignment: *Functional Alignment*

Functional Alignment serves as a guide in determining the function of spaces bound by the alignment of specific resources. The type of axis used to delimit space is also dependent on the social affiliation of the resources being aligned. Select from the following list the social typology of each resource being aligned and then determine resulting axis type. Once multiple axes enclose a space, the function of the dominant axis typology determines the space's function.

Functional Alignment	**Economics**	**Religion**	**Politics**
Resource [1]	x	x	x
Resource [2]	x	x	x
Resulting Axis	x	x	x

Note: x indicates potential for selection

Magnitude *[Table V.4.1]*

Magnitude is a measure of the extent of cultural resource's physical and ethereal attributes. In assessing the range of cultural resources in traditional Hawaiian society, it can be assumed that the measures of magnitude varied on a case-by-case basis [i.e. in some cases the *mana* of a resource controlled relationships in space, while in others the abundances of a certain agricultural resource might control relationships in space]. To use this concept as an applicable design principle, magnitude will only be measured in regard to two measures of a resources importance; economic and religious magnitude. Each is discussed in terms of its influence on the organization of space below.

Economic Magnitude

Economic Magnitude measures the influence of socio-economic cultural resources on the physical organization of people in space. Of all the resource typologies [economic, religious and political], economics appeared to have the greatest impact on the spatial patterning of people and their living areas. This can be attributed to the subsistent lifestyle that sustained the Hawaiian people.

With the natural environment as their only lifeline, native Hawaiians placed great value on the resources that could sustain life. Handy and Pukuʻi make note of this relationship in *Native Planters*, suggesting the Hawaiians' dependency on water and agricultural [economic] resources played a large role in the density and dispersal of settlements. It was largely the locality and availability of water resources that formed the basis for settlement.

To use this concept as an applicable design principle, it's necessary to recognize water and agricultural resource's importance as settlement form givers. This project proposes to measure the influence of all major economic resources through the integration of a secondary resource boundary that spreads at a significant distance from the resource. By creating a secondary resource boundary from the primary resource, the project is able to spatially represent the importance of economic resources.

The secondary resource boundary is represented as a 1/8 mile radius that extends from limits of the existing economic resource. This figure is based on the average distance of indigenous settlements [*Kuleana Homesteads*] to major economic resources, and the average distance of current homesteads from major infrastructure networks.

Religious Magnitude

Religious Magnitude measures the influence cultural resources had on the organization of people in space according to a resources ethereal attributes. Contrary to the western conception of the space, native Hawaiians saw the world that they lived in as a system formed by both physical and ethereal relationships. They believed their gods were ever-present parts in society's function and organized a great deal of the physical world around their idolization. Thousands of temples and shrines are scattered throughout the islands, while almost all chants, folklore and dance, allude to some sort of supernatural deity or life form.

Translating this type of information into a contemporary design system, requires identification of resources that had any form of socio-religious influence and then creating a method to represent the ethereal nature of a resource spatially. To simplify this process only a religious-based resource will consider translating ethereal attributes into an additional spatial delineation device.

Every resource with a socio-religious affiliation will apply a secondary boundary to account for both their physical and ethereal attributes. The boundary will extend outward at a 1/3 ratio from the existing resource. An example of this would be a small spatial buffer that moves beyond the limits of a *heiau* or altar, continuing the influence of a resource beyond its immediate limits. The choice for this distance/value is based on the concept that ethereal resources have an influence on the physical world, yet don't carry the same level of clarity in their spatial influence as physical resources. Until further research determines a more concrete value, the ethereal influence of cultural resources will be represented as a spatial divisional device.

Delineating the magnitude of cultural resources according to these measures allows for the representation of important cultural concepts that often go unrecognized in current planning methodologies. The next section discusses how each social and spatial grouping influences the space within Magnitude areas.

Table V.4.1 Cultural Resource Magnitude: *Economic and Religious Magnitude*[35]

Economic and *Religious Magnitude* measure the level of a resource's importance in addition to their immediate physical boundaries. From the following list select all resources that had economic or religious affiliations and demarcate accordingly.

Magnitude	Economic	Religious
Geographic		
Objects [trees, rocks, etc.]		
Object 1	x	x
Object 2	x	x
Object 3	x	x
Groupings of Objects	x	x
Projections [hills]	x	x
Caves	x	x
Mountain Peaks	x	x
Ocean	x	x
Streams / Ponds	x	x
Springs / Wells	x	x
Observation Area	x	x
Sporting Area	x	x
Celestial		
Constellation Paths[36]		
Major	x	x
Minor	x	x
Solstices	x	x
Constructed		
Dwelling [Kauhale]	x	x
Temple/Shrine [Heiau]	x	x
Trails / Paths	x	x
Burial Area	x	x
Constructed [Other]		
Ahupua'a	x	x
'Ili	x	x

Note: x indicates potential for selection

[35] Partially adapted from: Kelley, Panaewa, Minerbi, Luciano, Davianna McGregor, and Jon Matsuoka. "Phase III. Native Hawaiian Access Rights Project Recommendations for SMA Rules and Process." Honolulu, HI: University of Hawai'i. 2002.

[36] Determining constellation paths requires extensive research into the significant star's in the Hawaiian belief system and then mapping their individual paths. Due to time constraints, this project will not observe these elements. Using these as design tools requires the user to follow the same process used in mapping the sun path and it's solstices.

Proximity *[Table V.5.1]*

Proximity measures the spatial relationships and patterns found within a resource's range of influence [magnitude]. Authors Kanahele and Malo, indirectly address measures of proximity when discussing the way certain cultural resources could influence interactions in space. Not only did resources impact spatial division and function as displayed by Magnitude, but they also influenced the way people moved and interacted in space. Two examples of the impacts of proximity can be seen in the way religious resources controlled [limited] social interaction around religious sites and objects, and the way economic resources could control the density and dispersal of settlements. There are other examples of proximity being used to control interactions in space, however, this project reduces measures of proximity of the two aforementioned groupings [religion and politics] to simplify the representation of the concept and build from the same constructs introduced in magnitude. Each is discussed below.

Religious Proximity

Religious proximity measures the relationships in space formed by religious-based cultural resources. The patterns formed by religious resources largely influenced spatial relationships dealing with accessibility [i.e private/public, sacred/common]. Contrary to the western conception of space, native Hawaiians saw the world that they lived in as a system formed by both physical and ethereal relationships.

The spatial representation of these religious concepts was largely influenced by concepts of *mana* and *kapu*. Every resource was believed to hold *mana* [a principle that placed value on power, authority, and/or prestige]. The amount of *mana* a resource held governed the terms for social and spatial interaction. To protect *mana* and maintain social hierarchy, the concept of *kapu* [taboo], placed restrictions on cross-*mana* relationships, controlling interaction and accessibility. Resources that fell outside of *kapu* were recognized as *noa* [free] and were not subjected to the interaction restrictions imposed by *kapu*.

These concepts show varying levels of accessibility and interaction dependent on where a person was in relation to a religious resource. Interaction near a *kapu* area was much less evident than an area away from it. To represent the concepts displayed by religious proximity, this project proposes a gradient for each religious resource that indicates an increase in activity as it moves away from a resource. As the gradient reduces, interaction, whether by settlement development, community use, or even pedestrian movement, is required to decrease from the outer proximity limit.

Economic Proximity

Economic proximity measures the relationships in space formed by economic-based [subsistence] cultural resources. The patterns formed by economic resources largely influenced spatial relationships dealing with settlement density and agricultural production. The impacts of this are most evident in traditional settlement and usage patterns, which were focused near areas with higher amounts of life sustaining resources [the *Land Commission Awards* at Anahola are evidence of this]. Lower

productivity areas on the other hand, appeared much less probable to host settlement as they lacked the resources to sustain life [which likely explains the lack of *Land Commission Awards* at Anahola in areas away from water sources].

Representing these phenomena [varying settlement densities and agricultural production] requires an assessment of the resources that contributed to the economic system in the traditional setting. Resources that had larger influences on concentration and production were likely to be those with a higher abundance of water and prime soil. On the contrary, resources with low levels of water and prime soil were likely to host low settlement concentration. Identifying an area's economic resources will enable the spatial representation of economic phenomenon. This project proposes to represent economic resources as a gradient that indicates an increase in activity as it moves towards a resource. The range of the economic proximity extends to the distance of the magnitude determined in the previous section.

Like the representation of magnitude, the various proximities of cultural resources in a contemporary design system enable the translation of cultural concepts that otherwise go unaccounted for in conventional planning methodologies. As of now there are little, if any, systems that represent cultural concepts based on their physical and ethereal importance. By introducing a system that takes the delineation of space beyond a site's natural resources, and additionally looks at the influence and importance of a site's physical and ethereal attributes, there is the potential of expanding design systems into completely new areas of cultural relevance.

Table V.5.1 Cultural Resource Proximity: *Religious and Economic Proximity*[37]

Economic and *Religious Proximity* indicate a resource's spatial influence within a predetermined area. *Economic Proximity* directs settlement density and agricultural usage, while *Religious Proximity* measures the accessibility in and around resources of religious importance. Using the same selection process as cultural resource magnitude, select the appropriate resource proximity and demarcate accordingly.

Proximity	**Economic**	**Religious**
Geographic		
Objects [trees, rocks, etc.]		
Object 1	x	x
Object 2	x	x
Object 3	x	x
Groupings of Objects	x	x
Projections [hills]	x	x
Caves	x	x
Mountain Peaks	x	x
Ocean	x	x
Streams / Ponds	x	x
Springs / Wells	x	x
Observation Area	x	x
Sporting Area	x	x
Celestial		
Constellation Paths[38]		
Major	x	x
Minor	x	x
Solstices	x	x
Constructed		
Dwelling [Kauhale]	x	x
Temple/Shrine [Heiau]	x	x
Trails / Paths	x	x
Burial Area	x	x
Constructed [Other]		
Ahupua'a	x	x
'Ili	x	x

Note: x indicates potential for selection

[37] Partially adapted from: Kelley, Panaewa, Minerbi, Luciano, Davianna McGregor, and Jon Matsuoka. "Phase III. Native Hawaiian Access Rights Project Recommendations for SMA Rules and Process." Honolulu, HI: University of Hawai'i. 2002.

[38] Determining constellation paths requires extensive research into the significant star's in the Hawaiian belief system and then mapping their individual paths. Due to time constraints, this project will not observe these elements. Using these as design tools requires the user to follow the same process used in mapping the sun path and it's solstices.

Spatial Implementation

Each of the constructs introduced in this chapter provide unique representations of various spatial relationships drawn from the traditional Hawaiian setting. When all constructs have been addressed according to the tables above, the formation of *Place Frame* development may begin.

The diagrams [Diagrams V.2.1-5] at the end of this chapter show how each construct can be applied as a spatial delineation device. Each supplements the information collected in the preceding tables, illustrating how the information regarding, boundary, alignment, magnitude and proximity can be represented spatially. Applying each spatial delineation device to the respective resources at a specific site will result in creation of a *Place Frame*.

Additional Considerations

The proposed principles are only the beginning of a new way of using indigenous constructs to reshape the identity of place. As more research is conducted principles suggested here will likely expand and evolve. The intent of the information presented is to provide a gateway for future research on the spatial identity of place and redirect the trends that guide the current design processes. The next chapter shows how the guidelines and principles can be realized in an actual site at DHHL Anahola, Kaua‘i.

Table V.6.1 Spatial Delineation Devices in Hawaiian Literature[39]

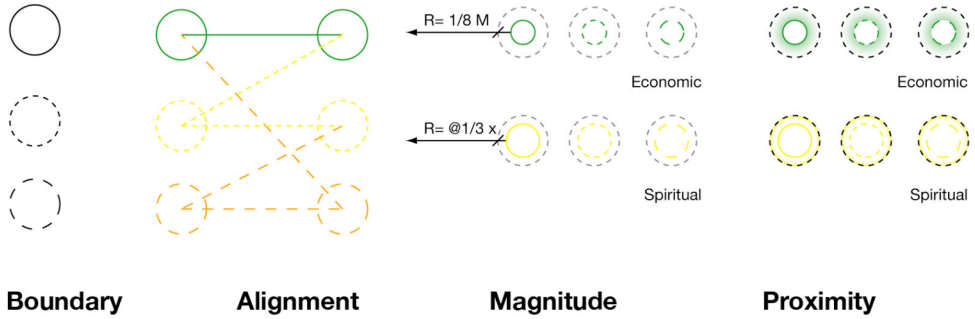
	Handy and Puku'i	Kamakau	Kanahele	Malo	NHLCA	Warther
Boundary [D/I]	**[D]**	**[D/I]**	**[D]**	**[D]**	**[D]**	**[D]**
	Similar to Malo. Also noted the passive limits to ohana areas and the various resources and devices used to delimit political, agricultural, family and religious spaces. [46-58, 284-300]	Similar to Malo. Also noted differences in boundary typologies. [3-12]	The delimitation of physical and imaginary boundaries formed the basis for indigenous spatial division. Boundary definition was based on the resources used to delimit them. [176-177	The geographic and celestial features of a place determined the limits of political, economic [agricultural] and personal land divisions. [16-18]	Boundaries were tangible and intangible limits of spaces governed by the relationship of resources. [75-83]	The limits and orientation of some religious spaces were defined by the axes formed by the alignment of resources. [28]
Magnitude [D/I]	**[I]**	**[D]**	**[D/I]**	**[I]**	**[I]**	**[I]**
	The varying importance of agricultural produce as well as the social hierarchies impacted patterns of habitation and the division of land. [46-58, 63-65]	The physical features in the landscape determined the extent of a land division. [6-9]	Social and spiritual proxemics, territoriality and the continuum of space impacted the extent of a resources influence on spatial relationships. [175-209]	The religious, political and economic importance of land and celestial resources determined a spaces extent of influence and the way it was used. [17,135-152]	The religious and subsistence importance of resources controlled their range of spatial influences. [67-75]	The religious significance of resources determined the sacredness of spaces. [30-32]
Proximity [D/I]	**[I]**	**[D]**	**[D/I]**	**[I]**	**[D/I]**	**[I]**
	The density and dispersal of families were results of agricultural production and landscape diversity. Religious beliefs also impacted the division of spaces. [46-58, 63-65]	The physical features in the landscape determined the how the spaces within land divisions were used. [6-9]	Social and spiritual proxemics, territoriality and the continuum of space impacted peoples patterns of movement, settlement, and accessibility. [175-209]	The religious, political and economic importance of land and celestial resources determined the way they were used and interacted with. [17,135-152]	The religious and subsistence importance of resources controlled the way people accessed, interacted with and inhabited different places in the landscape. [67-75]	The religious significance of resources controlled the way people accessed and interacted with certain places in the landscape. [30-32]
Alignment [D/I]	**[D]**	**[D]**	**[D]**	**[I]**	**[N/A]**	**[D]**
	The alignment of physical features was used to demarcate the boundaries of ahupua'a, 'ili and other land divisions. [46-52]	Similar to Malo. [3-12]	The relationships of points and lines in space helped create the limits of a place. [175-180]	The location of physical and celestial features were used as references in determining ones orientation in space. [9-11]	None	The relationships of physical and ethereal resources formed axis that demarcated various religious spaces. [30]

[D/I] indicates whether constructs are taken directly **[D]** or inferred **[I]** from the literature, [N/A] indicates areas where it does not apply

[39] Handy, E.S.Craighill and Puku'i, Mary Kawena. "Native Planters of Old Hawai'i: their Life, Lore and Environment." Honolulu, HI: Bishop Museum Press. 1972.
Kamakau, Samuel. "The Works of the People of Old." Honolulu, HI: Bishop Museum Press. 1976.
Kanahele, George. "Ku Kanaka Stand Tall." Honolulu, HI: University of Hawai'i Press. 1992.
Malo, David. "Hawaiian Antiquities." Honolulu, HI: First People's Productions. 2006.
Minerbi, Luciano, Davianna McGregor, and Jon Matsuoka, eds. *Native Hawaiian and Local Cultural Assessment. Phase I Problems / Assets Identification.* Honolulu, HI: University of Hawai'i. 1993.
Warther, Francis. *Kumu Kahi.* Kilauea, HI: Ka Imi Na Au'ao o Hawai'i Nei Educational and Research Institute. 1996.

Diagram V.2.1 Spatial Principles/Constructs: *Guidelines**

Boundary – The immediate limits of a resource [varies depending on physical definition]
Alignment – The relationships of resources associated with an area [all linked to political delineation]
Magnitude – The secondary limit that determines a resource's range of influence
Proximity – The variations in the secondary limit's spatial configurations



***Note:** The boundary of a resource is not limited to the circular configuration shown in the topology examples. The circle is used to easily show the relative center of a resource [for alignment] and the secondary limit radius [for magnitude].

Diagram V.2.2 Spatial Principles/Constructs: *Economic Resources*

Boundary – Identify all economic [subsistence] based resources
Alignment – Delimit the axes of all resources associated with indigenous economics
Magnitude – Delimit the secondary limits of all economic resources at a 1/8-mile radius from resource
Proximity – Indicate the range of influence caused by each economic resource, define spaces accordingly

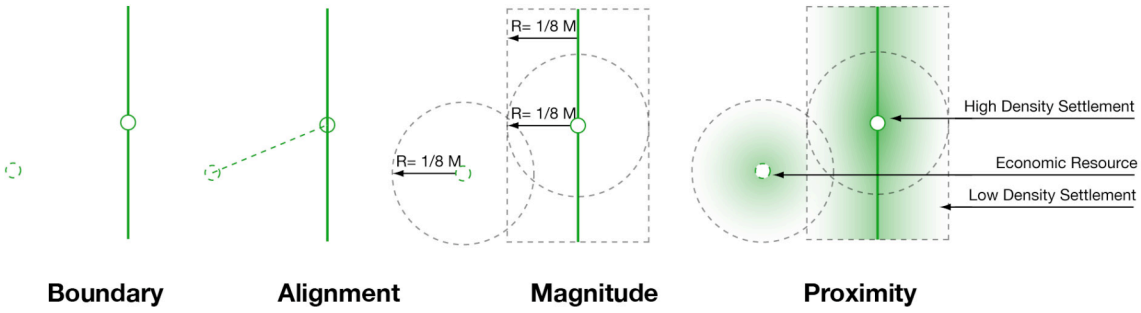
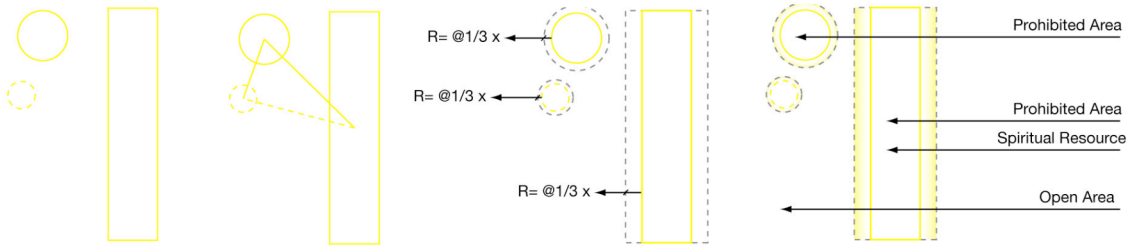


Diagram V.2.3 Spatial Principles/Constructs: *Religious Resources*

Boundary – Identify all religious based resources
Alignment – Delimit the axes of all resources associated with indigenous religion
Magnitude – Delimit the secondary limits of all religious resources at a 1/3-mile scale radius from resource
Proximity – Indicate the range of influence caused by each religious resource, define spaces accordingly



Boundary **Alignment** **Magnitude** **Proximity**

Diagram V.2.4 Spatial Principles/Constructs: *Political Resources**

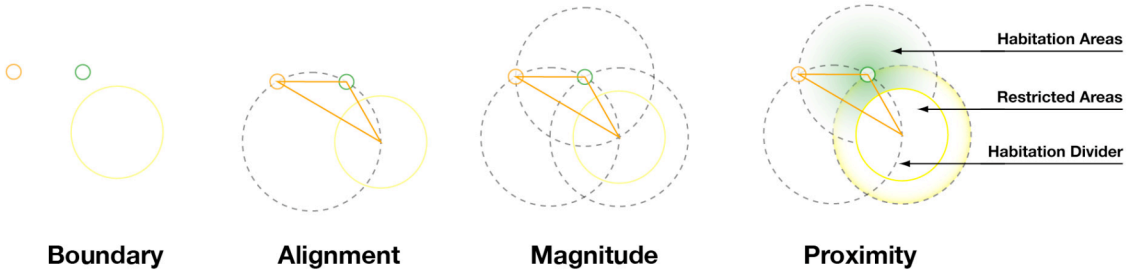
Boundary – Identify all political based resources
Alignment – Delimit the axes of all political resources and other resources
Magnitude – N/A
Proximity – N/A

Boundary **Alignment** **Magnitude** **Proximity**

***Note:** Each resource topology represents an individual scenario

Diagram V.2.5 Spatial Principles/Constructs: *Composite*

Boundary - Identify all resources, their respective boundaries and typology
Alignment - Define the associative axes between all site related resources
Magnitude - Delimit the secondary limits of resources according to their typology
Proximity - Define the way spaces are occupied based on their typology



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VI. APPLICATION: DHHL ANAHOLA, KAUA‘I

- -

Site Selection: *Anahola, Kaua'i*

To show how all the outlined spatial principles in *Chapter V* form a new framework for development, a site for application must be selected. The DHHL land at Anahola, Kaua'i is an ideal setting, given it's rural backdrop, abundance of cultural resources and the improvements that a new spatial framework potentially will provide for the current [culturally deficient] system for development.[40]

Site Background

At 4228 acres the DHHL land at Anahola represents the DHHL's largest land holding on the island of Kaua'i. Of that land, roughly 13% [165 acres Residential, 241 acres Agricultural, and 154 acres Pastoral and Commercial] have been developed, while roughly another 2% [71 acres Residential] is currently being developed. That leaves roughly 77% or 3250 acres remaining for future development [the other 8% or 350 acres is state designated conservation lands].

The land, which consists of a variety of geographic features and resources, extends from the shoreline inland to the Kealia Forest Reserve.[41] Historically the land was well known for its agricultural richness. The abundance of water resources [multiple streams, wells and a large coastline] formed the foundation for early Hawaiian settlements as indicated by the Kuleana Homestead Awards and Handy and Puku'i's commentary on Anahola in the book *Native Planters*. Rich soil and large flat areas provided optimal locations for agricultural production as indicated by the large plantation developments that emerged around the turn of the 20th century.

Today a majority of the open, soil rich, agricultural lands are abandoned plantation fields used for ranching, while the land near water resources is overgrown with invasive wildlife [plants and animals]. Infrastructure networks and residential developments break up accessibility from mountain to sea as well as native Hawaiians access to cultural resources.

The DHHL's desire to increase the amount of residential and agricultural development threatens the remaining open lands at Anahola. Although most [land] has already been altered [early plantations used a large part of the land for agriculture production], the proposed patterns of development for DHHL's upcoming projects pose grave threats, given the way they dramatically alter the identity of the cultural spaces and resources.

Existing Design Methodology

The current methodology used to develop the land at Anahola is outlined in a master plan created in the mid-80's and a follow-up study completed in 2004. No significant changes have been made to the plan since it's inception in the 80's.
The data that informs the planning methodology consists of; topography, site drainage, agricultural potential [drawn from soil, slope and existing agricultural use assessments],

[40] Anahola's plan for development is based on a 1987 study conducted by Belt and Collins that lacks cultural insight in the spatial and social organization of the Hawaiian community. Instead the study focus a majority of it's efforts on a plan that maintains economic stability through the adaptation of western planning processes.
[41] DHHL. "Regional Plan: Anahola, Kaua'i." Honolulu, HI: DHHL. 2007. [8-1]

infrastructure accessibility [the location of water, roads, waste and electricity systems], economic potential and accessibility, the preservation of cultural resources and sites [designated as community use or special use district], demographics and the adherence to county development standards. All of these concepts are drawn from western-based planning methodologies. The idea of traditional ahupua'a planning is also mentioned as a driving concept, yet the only notable comparison is the designation of areas where community members can access resources. While these community areas account for nearly 45% [1896 acres] of DHHL's land at Anahola, almost all of it is overgrown and inaccessible [fenced off] to the community.

The end result of the applied [economic and infrastructure centered] western methodology is the rigid differentiation of agriculture, subsistence, commercial, community and residential spaces. Of these, only subsistence and community spaces resemble forms of the cultural concepts of land use and spatial delineation. Although these two types of spaces resemble cultural concepts, the way they delimit space still retains western views of spatial division and land use.

The delineation of space according to typical planning methodology lacks major components of cultural identity. As displayed by the cultural concepts and constructs in **Chapters III** and **V**, the spatial divisions of indigenous developments were not only a matter of economic and infrastructure systems, but also spiritual and social hierarchies. Developing these [spiritual and social] concepts into spatial delineation devices and redefining the role of economics and infrastructure in the creation of space provides a new, more culturally centered way of developing the land.

Applying the Guide

The delineation of space applies to every scale [structure, homestead, community, district, etc.] of development. This project looks primarily at how the proposed design framework can serve in delimiting habitable spaces at the homestead scale. The best traditional comparison would be the *'ili* which typically included the families dwelling structures [*kauhale*] as well as their agricultural crops and resources. While there is no defined size for these land divisions, the *'ili* divisions and classifications described in the *Kuleana Homestead Awards*, provide general dimensions to land divisions at the homestead scale. Based upon the general lot sizes of documented Anahola *'ili*, this project will assume the homestead land areas to be in the 1-5 acre range.

The project site is located in and around an area already proposed for subsistence land use [See Image VI.1.3]. This is done to see how a new framework for indigenous-based development can serve in purposely delineating space in an area that will likely follow the pattern of other DHHL developments. Choosing this site does not intend to support the DHHL's decision to allocate that site as a subsistence land division, but rather to provide an alternative development methodology for DHHL.

The principles outlined in **Chapter V** will provide the system for delimiting the homestead land divisions. The following information shows how the spatial framework is created and then developed into a series of homestead spaces.

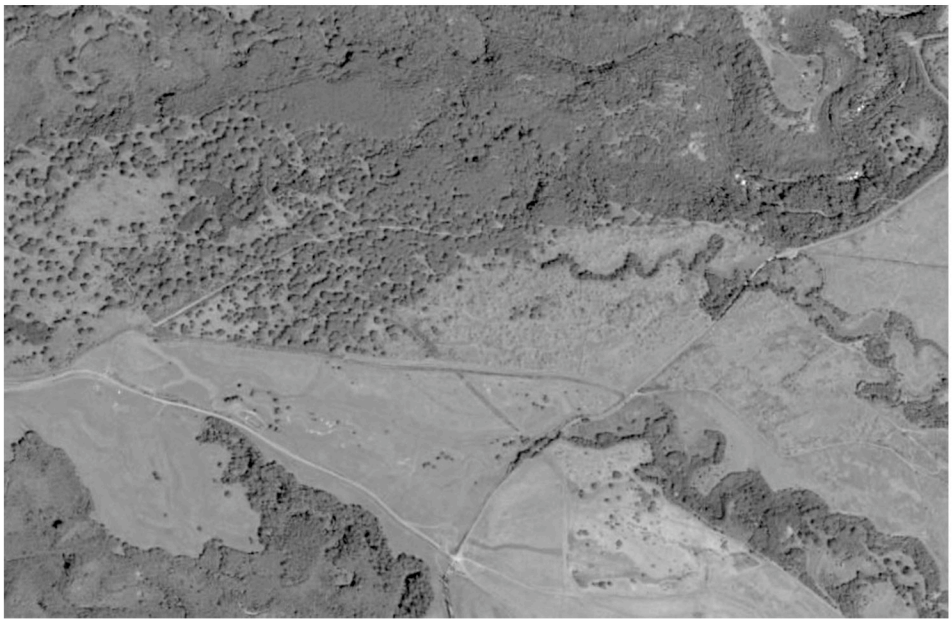
Application Steps

1. Select site and location for place frame
2. Establish existing [foreign] systems for delineation
3. Determine site's cultural resources
4. Determine cultural resource boundaries and define typology
5. Determine cultural resource alignments and define typology
6. Determine cultural resource magnitude and define typology
7. Determine cultural resource proximity and define typology
8. Determine influential foreign systems for delineation
9. Generate composite place frame
10. Determine bounding axes for focused area of development
11. Select all cultural resources within focused area for development
12. Delineate appropriate limits for each homestead site
13. Locate site development in accordance to proximity guides
14. Place dwellings and cultivation accordingly

Image VI.1.1 Anahola + Place Frame Site

[1/2 mile]

Image VI.1.2 Place Frame Site



[1/8 mile]

Image VI.1.3 Existing DHHL Land Uses Large

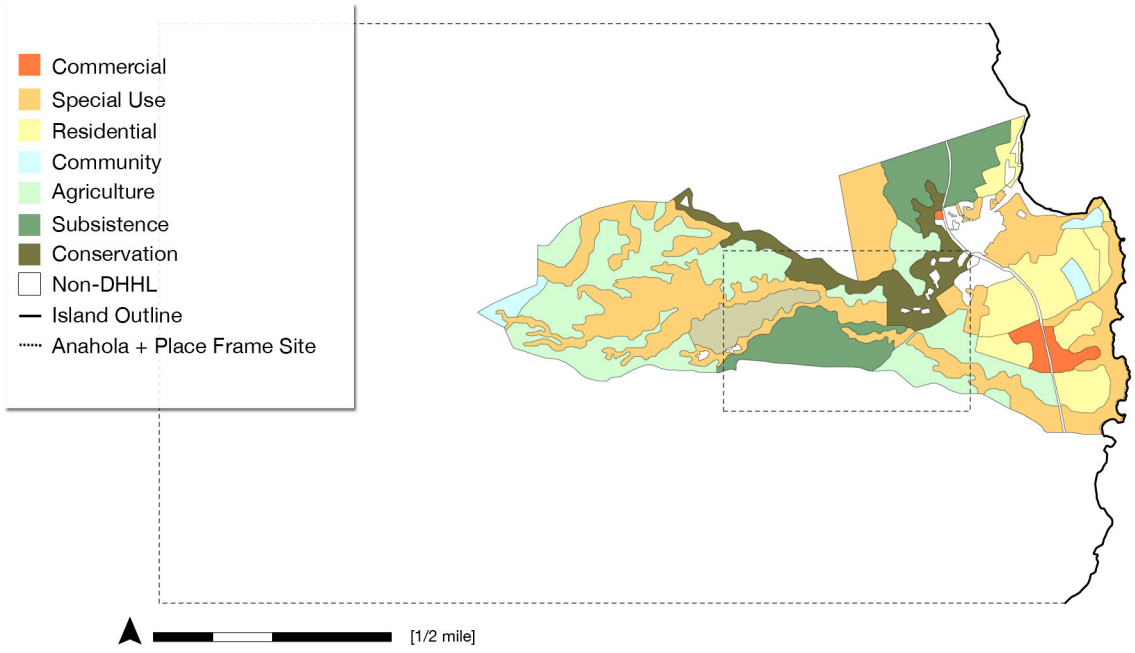


Image VI.1.4 Foreign Based Delineation Systems Large

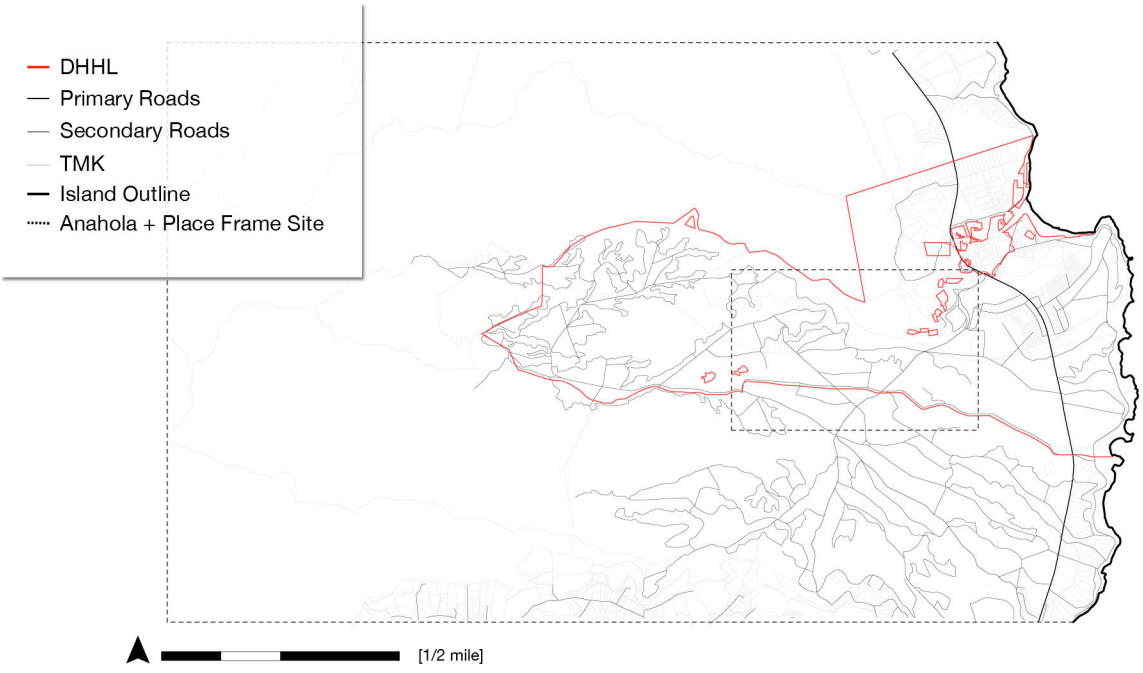


Table VI.1.1 Cultural Resource Identification[42]

To use *Cultural Resources* as guides in the development of a new spatial framework, it is important to first establish their existence relative to a site. Select from the following list all the *Cultural Resources* associated with the potential area for development.

Identification	Existent	Absent
Geographic		
Objects [trees, rocks, etc.]		
Object 1	√	
Object 2	√	
Object 3	√	
Groupings of Objects	√	
Projections [hills]		√
Caves		√
Mountain Peaks	√	
Ocean		√
Streams / Ponds		√
Springs / Wells	√	
Observation Area		√
Sporting Area		√
Celestial		
Constellation Paths[43]		
Major		√
Minor		√
Solstices	√	
Constructed		
Dwelling [Kauhale]		√
Temple/Shrine [Heiau]	√	
Trails / Paths		√
Burial Area		√
Constructed [Other]		
Ahupua'a	√	
'Ili	√	

[42] Partially adapted from: Kelley, Panaewa, Minerbi, Luciano, Davianna McGregor, and Jon Matsuoka. "Phase III. Native Hawaiian Access Rights Project Recommendations for SMA Rules and Process." Honolulu, HI: University of Hawai'i. 2002.

[43] Determining constellation paths requires extensive research into the significant star's in the Hawaiian belief system and then mapping their individual paths. Due to time constraints, this project will not observe these elements. Using these as design tools requires the user to follow the same process used in mapping the sun path and it's solstices.

Table VI.1.2 Cultural Resource Identification[44]

The character of each cultural resource governs its role as a spatial delineation device. From the following list select the association; *Economic, Religious,* or *Political*, each resource would have had in the traditional setting. More than one association is possible.

Identification	Economic	Religious	Political
Geographic			
Objects [trees, rocks, etc.]			
Object 1			√
Object 2			√
Object 3			√
Groupings of Objects			√
Projections [hills]			
Caves			
Mountain Peaks			√
Ocean			
Streams / Ponds	√		
Springs / Wells	√		
Observation Area			
Sporting Area			
Celestial			
Constellation Paths[45]			
Major			
Minor			
Solstices	√	√	
Constructed			
Dwelling [Kauhale]			
Temple/Shrine [Heiau]		√	
Trails / Paths			
Burial Area			
Constructed [Other]			
Ahupua'a			√
'Ili			√

[44] Partially adapted from: Kelley, Panaewa, Minerbi, Luciano, Davianna McGregor, and Jon Matsuoka. "Phase III. Native Hawaiian Access Rights Project Recommendations for SMA Rules and Process." Honolulu, HI: University of Hawai'i. 2002.

[45] Determining constellation paths requires extensive research into the significant star's in the Hawaiian belief system and then mapping their individual paths. Due to time constraints, this project will not observe these elements. Using these as design tools requires the user to follow the same process used in mapping the sun path and it's solstices.

Table VI.2.1 Cultural Resource Boundary[46]

Every cultural resource maintains a boundary that defines the space it occupies. In observing the range of cultural resources used by native Hawaiians, there are three apparent *Boundary* classifications. These include; *Fixed* [marked or constructed], *Calculated* [unmarked yet apparent] and *Ambiguous Variable* [unmarked and unclear]. Use the following list to classify each cultural resource *Boundary* accordingly.

Boundary	**Fixed**	**Calculated**	**Ambiguous**
Geographic			
Objects [trees, rocks, etc.]			
Object 1	√		
Object 2	√		
Object 3	√		
Groupings of Objects		√	
Projections [hills]			
Caves			
Mountain Peaks		√	
Ocean			
Streams / Ponds	√		
Springs / Wells	√		
Observation Area			
Sporting Area			
Celestial			
Constellation Paths[47]			
Major			
Minor			
Solstices		√	
Constructed			
Dwelling [Kauhale]			
Temple/Shrine [Heiau]	√		
Trails / Paths			
Burial Area			
Constructed [Other]			
Ahupua'a		√	
'Ili		√	

[46] Partially adapted from: Kelley, Panaewa, Minerbi, Luciano, Davianna McGregor, and Jon Matsuoka. "Phase III. Native Hawaiian Access Rights Project Recommendations for SMA Rules and Process." Honolulu, HI: University of Hawai'i. 2002.

[47] Determining constellation paths requires extensive research into the significant star's in the Hawaiian belief system and then mapping their individual paths. Due to time constraints, this project will not observe these elements. Using these as design tools requires the user to follow the same process used in mapping the sun path and it's solstices.

Image VI.1.5 Cultural Resource Identification Large

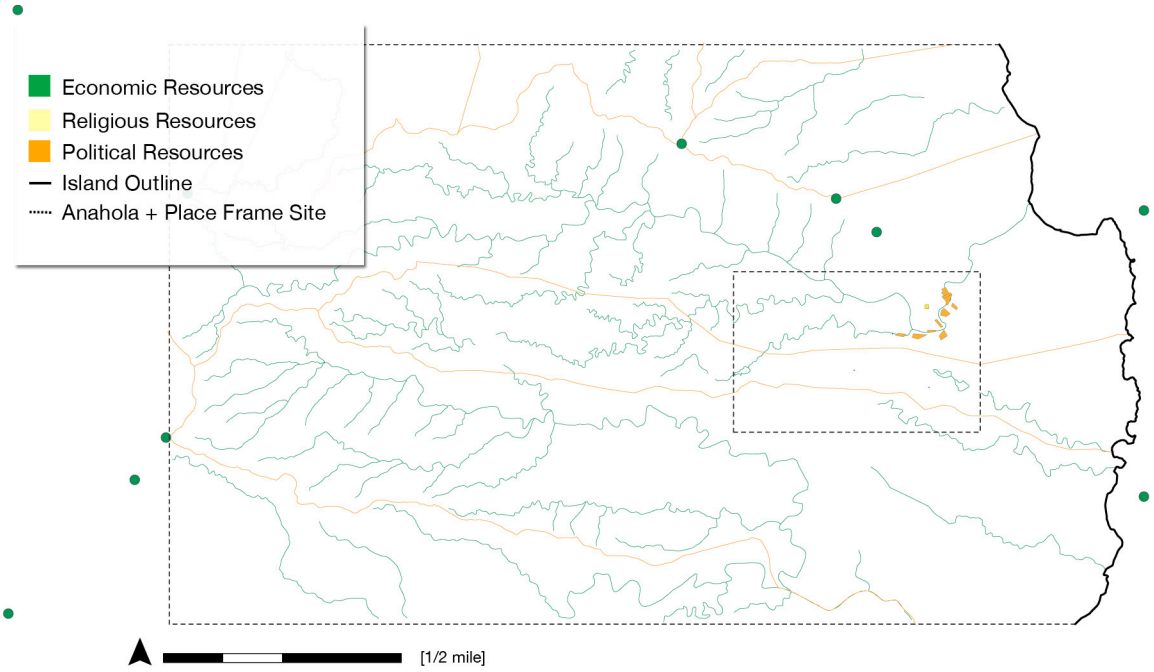


Image VI.1.6 Cultural Resource Identification [3d]

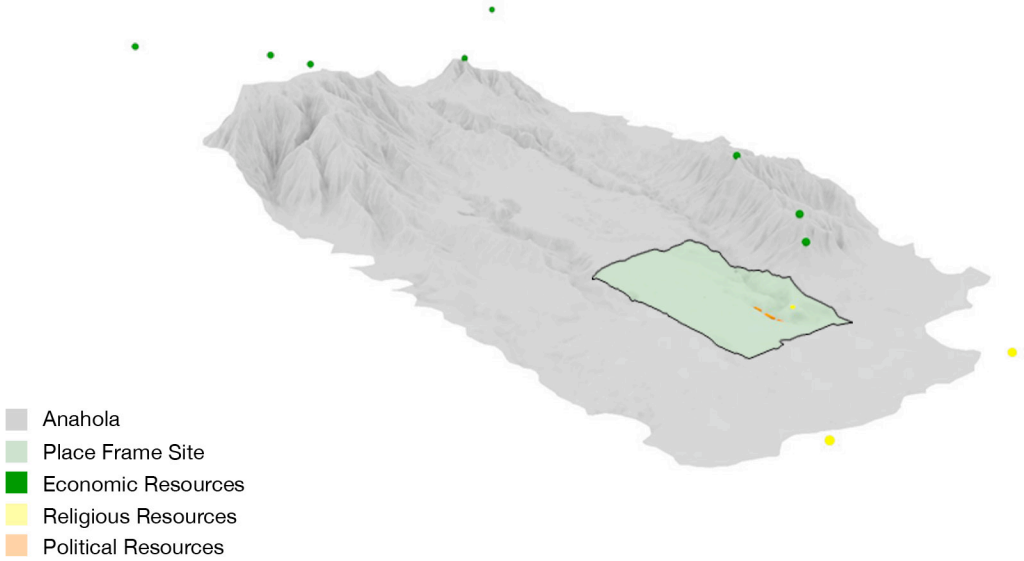


Image VI.2.1 Cultural Resources Identification

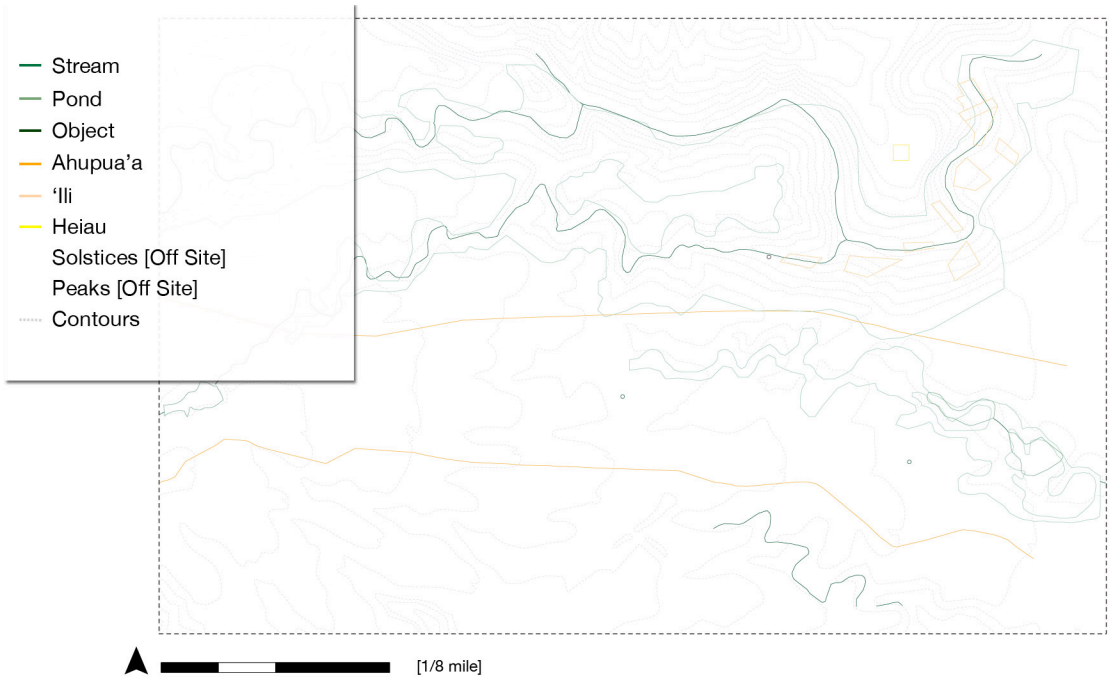


Image VI.2.2 Cultural Resources Identification

Image VI.2.3 Cultural Resources Boundary

Image VI.2.4 Foreign Resources Boundary

Table VI.3.1 Cultural Resource Alignment: *Boundary Alignment*

Boundary Alignment serves as a guide in the delineation and orientation of space. The type of axis used to delimit space is dependent in part on the boundary typology of two resources being aligned. Select from the following list each individual resource boundary and the resulting alignment typology. Each axis type corresponds to the lesser of the two resources being compared.

Boundary Alignment [1]	**Fixed**	**Calculated**	**Ambiguous**
Object	√		
Peak		√	
Resulting Axis		√	

Boundary Alignment [2]	**Fixed**	**Calculated**	**Ambiguous**
Object		√	
‘Ili		√	
Resulting Axis		√	

Boundary Alignment [3]	**Fixed**	**Calculated**	**Ambiguous**
Object		√	
Solstice		√	
Resulting Axis		√	

Boundary Alignment [4]	**Fixed**	**Calculated**	**Ambiguous**
Object	√		
Heiau	√		
Resulting Axis	√		

Boundary Alignment [5]	Fixed	Calculated	Ambiguous
‘Ili		√	
Peak		√	
Resulting Axis		√	

Boundary Alignment [6]	Fixed	Calculated	Ambiguous
‘Ili		√	
Solstice		√	
Resulting Axis		√	

Boundary Alignment [7]	Fixed	Calculated	Ambiguous
‘Ili		√	
Heiau	√		
Resulting Axis		√	

Boundary Alignment [8]	Fixed	Calculated	Ambiguous
Heiau	√		
Peak		√	
Resulting Axis		√	

Boundary Alignment [9]	Fixed	Calculated	Ambiguous
Heiau	√		
Solstice		√	
Resulting Axis		√	

Table VI.3.2 Cultural Resource Alignment: *Functional Alignment*

Functional Alignment serves as a guide in determining the function of spaces bound by the alignment of specific resources. The type of axis used to delimit space is also dependent on the social affiliation of the resources being aligned. Select from the following list the social typology of each resource being aligned and then determine resulting axis type. Once multiple axes enclose a space, the function of the dominant axis typology determines the spaces function.

Functional Alignment [1]	**Economics**	**Religion**	**Politics**
Object			√
Peak			√
Resulting Axis			√

Functional Alignment [2]	**Economics**	**Religion**	**Politics**
Object			√
‘Ili			√
Resulting Axis			√

Functional Alignment [3]	**Economics**	**Religion**	**Politics**
Object			√
Solstice		√	
Resulting Axis		√	√

Functional Alignment [4]	**Economics**	**Religion**	**Politics**
Object			√
Heiau		√	
Resulting Axis		√	√

Functional Alignment [5]	Economics	Religion	Politics
ʻIli			√
Peak			√
Resulting Axis			√

Functional Alignment [6]	Economics	Religion	Politics
ʻIli			√
Solstice		√	
Resulting Axis		√	√

Functional Alignment [7]	Economics	Religion	Politics
ʻIli			√
Heiau		√	
Resulting Axis		√	√

Functional Alignment [8]	Economics	Religion	Politics
Heiau		√	
Peak			√
Resulting Axis		√	

Functional Alignment [9]	Economics	Religion	Politics
Heiau		√	
Solstice		√	
Resulting Axis		√	

Image VI.3.1 Cultural Resource Relationships [Alignments]

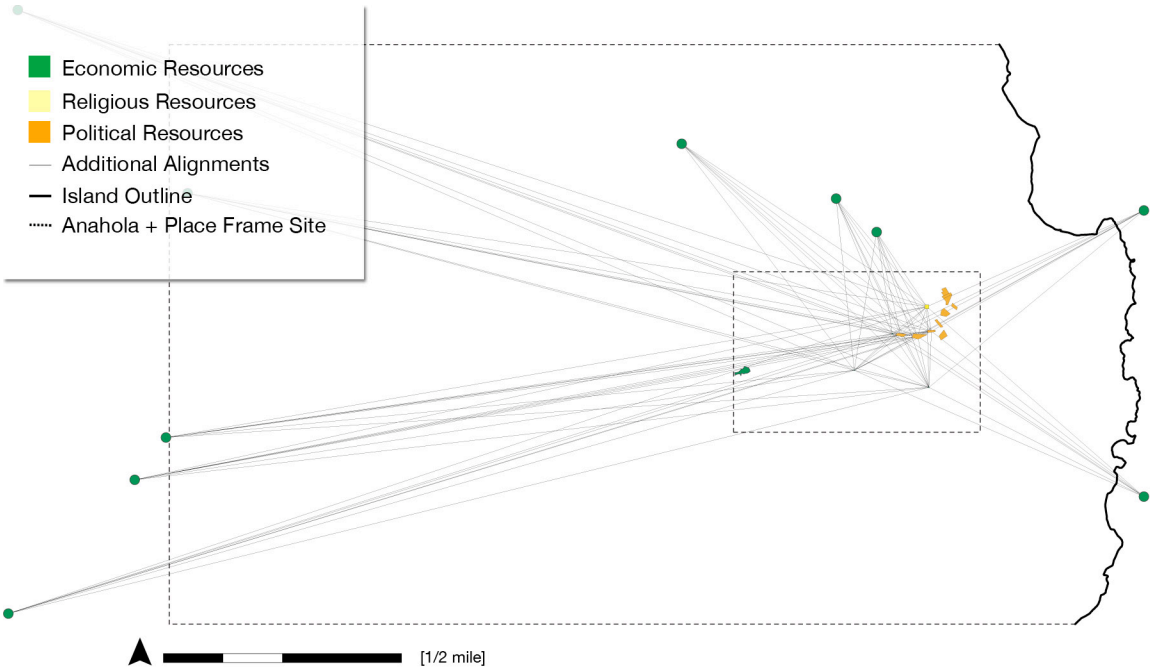


Image VI.3.2 Cultural Resource Relationships [Alignments] [3d]

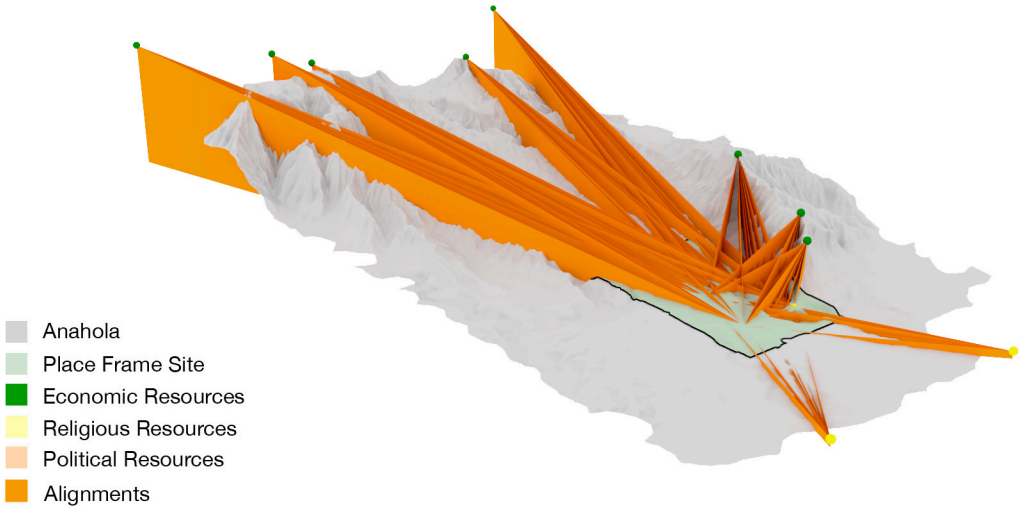


Image VI.3.3 Alignment Social

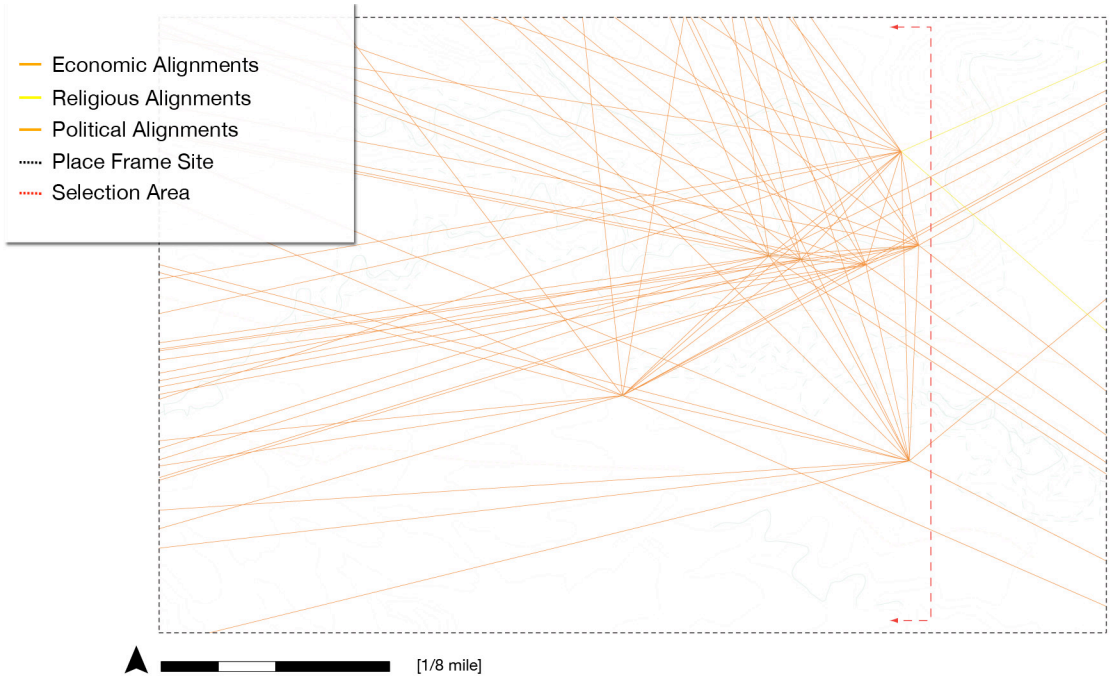


Image VI.3.4 Alignment Social [3d]

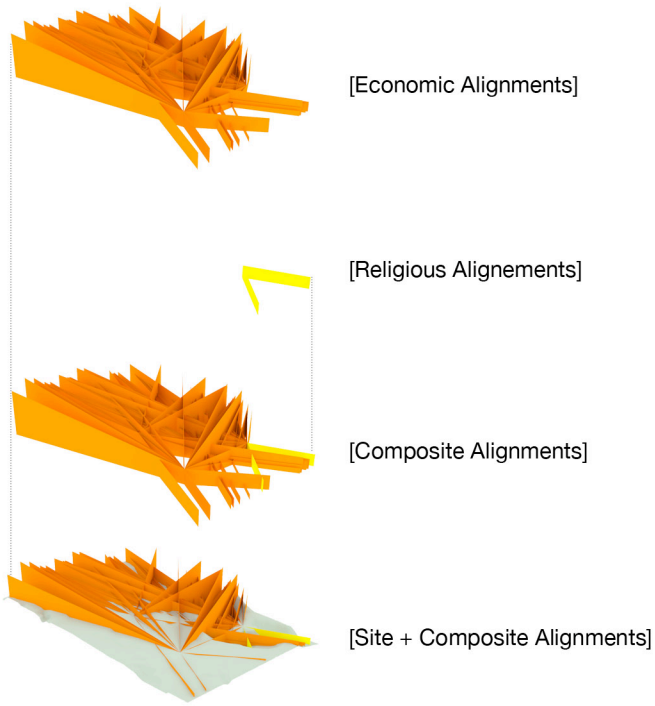


Image VI.3.5 Alignment Spatial

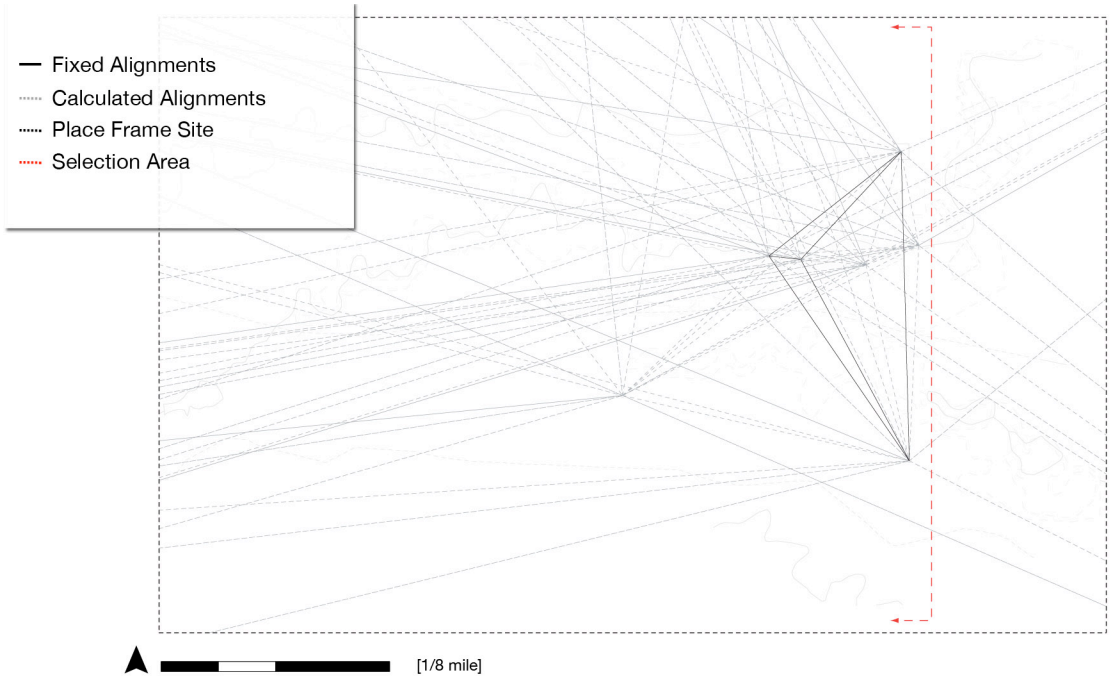


Image VI.3.6 Alignment Spatial [3d]

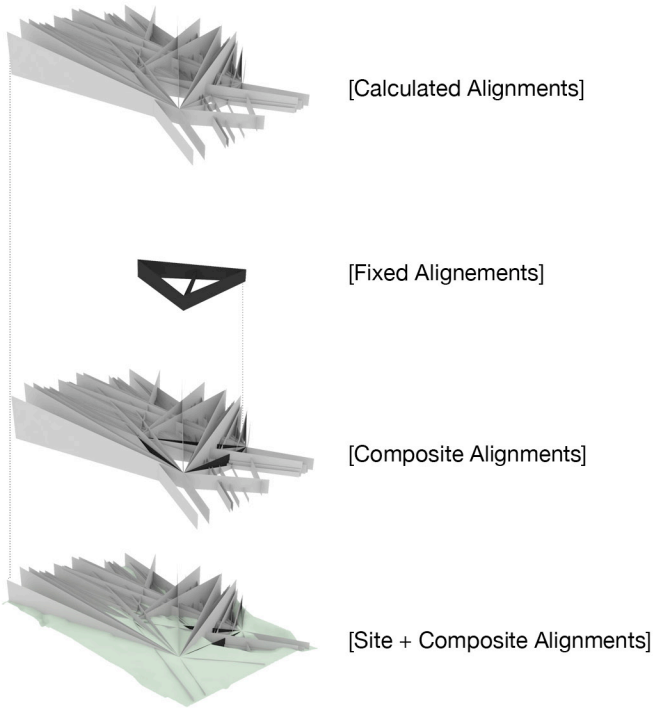


Table VI.4.1 Cultural Resource Magnitude: *Economic and Religious Magnitude*[48]

Economic and *Religious Magnitude* measure the level of a resource's importance in addition to their immediate physical boundaries. From the following list select all the resources that had economic or religious affiliations and demarcate accordingly.

Magnitude	Economic	Religious
Geographic		
Objects [trees, rocks, etc.]		
Object 1		
Object 2		
Object 3		
Groupings of Objects		
Projections [hills]		
Caves		
Mountain Peaks		
Ocean		
Streams / Ponds	√	
Springs / Wells	√	
Observation Area		
Sporting Area		
Celestial		
Constellation Paths[49]		
Major		
Minor		
Solstices	√	√
Constructed		
Dwelling [Kauhale]		
Temple/Shrine [Heiau]	√	
Trails / Paths		
Burial Area		
Constructed [Other]		
Ahupua'a		
'Ili		

[48] Partially adapted from: Kelley, Panaewa, Minerbi, Luciano, Davianna McGregor, and Jon Matsuoka. "Phase III. Native Hawaiian Access Rights Project Recommendations for SMA Rules and Process." Honolulu, HI: University of Hawai'i. 2002.

[49] Determining constellation paths requires extensive research into the significant star's in the Hawaiian belief system and then mapping their individual paths. Due to time constraints, this project will not observe these elements. Using these as design tools requires the user to follow the same process used in mapping the sun path and it's solstices.

Image VI.4.1 Magnitude

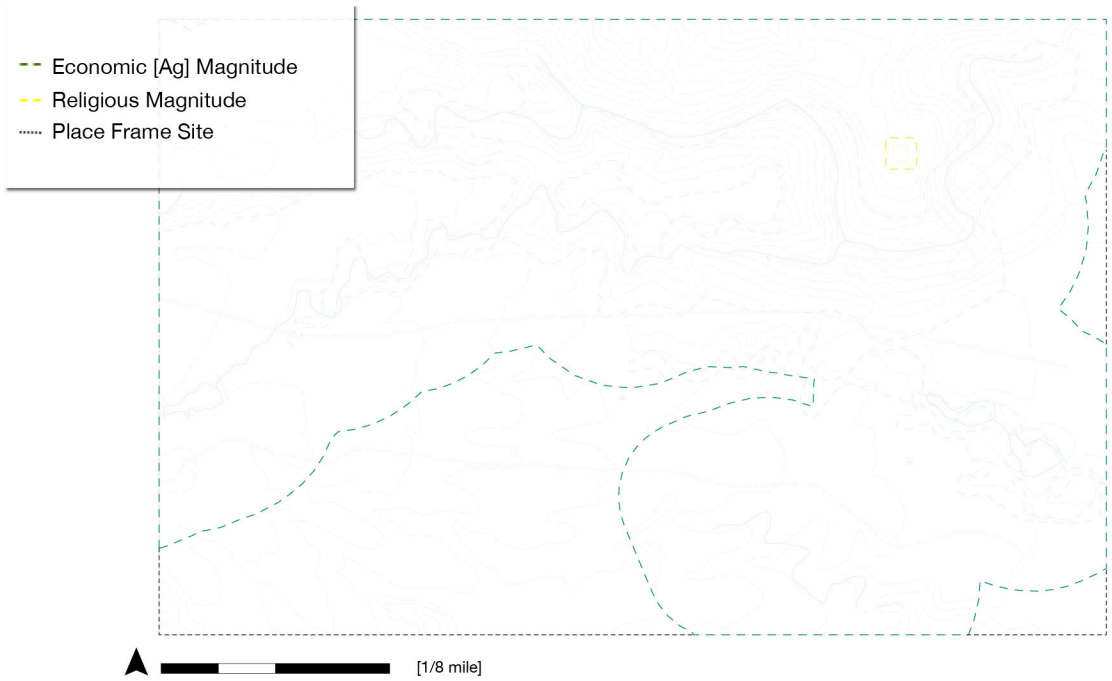


Image VI.4.2 Magnitude [3d]

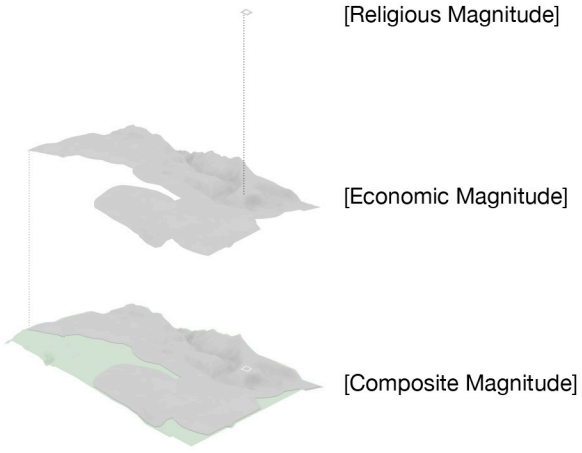


Table VI.5.1 Cultural Resource Proximity: *Religious and Economic Proximity*[50]

Economic and *Religious Proximity* indicate a resource's spatial influence within a predetermined area. *Economic Proximity* directs settlement density and agricultural usage, while *Religious Proximity* measures the accessibility in and around resources of religious importance. Using the same selection process as cultural resource magnitude, select the appropriate resource proximity and demarcate accordingly.

Magnitude	Economic	Religious
Geographic		
Objects [trees, rocks, etc.]		
Object 1		
Object 2		
Object 3		
Groupings of Objects		
Projections [hills]		
Caves		
Mountain Peaks		
Ocean		
Streams / Ponds	√	
Springs / Wells	√	
Observation Area		
Sporting Area		
Celestial		
Constellation Paths[51]		
Major		
Minor		
Solstices	√	√
Constructed		
Dwelling [Kauhale]		
Temple/Shrine [Heiau]	√	
Trails / Paths		
Burial Area		
Constructed [Other]		
Ahupua'a		
'Ili		

[50] Partially adapted from: Kelley, Panaewa, Minerbi, Luciano, Davianna McGregor, and Jon Matsuoka. "Phase III. Native Hawaiian Access Rights Project Recommendations for SMA Rules and Process." Honolulu, HI: University of Hawai'i. 2002.

[51] Determining constellation paths requires extensive research into the significant star's in the Hawaiian belief system and then mapping their individual paths. Due to time constraints, this project will not observe these elements. Using these as design tools requires the user to follow the same process used in mapping the sun path and it's solstices.

Image VI.5.1 Proximity

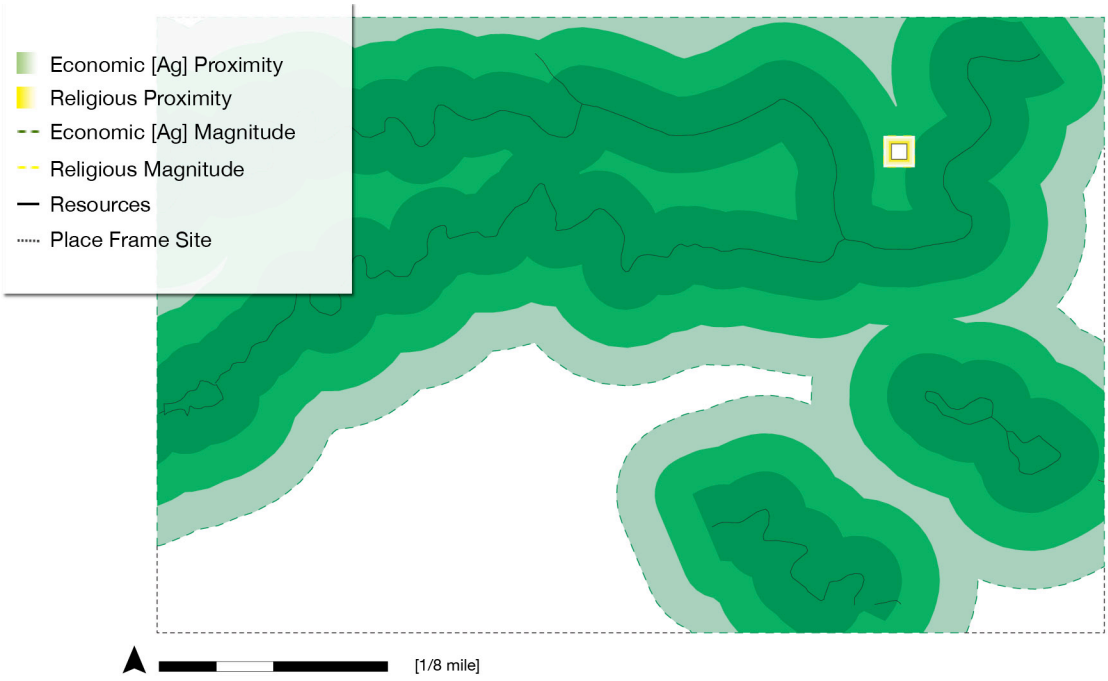


Image VI.5.2 Proximity [3d]

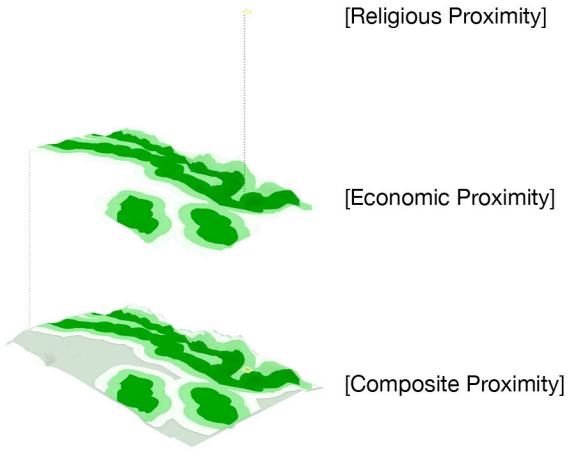


Image VI.6.1 Cultural Resource Composite [3d]

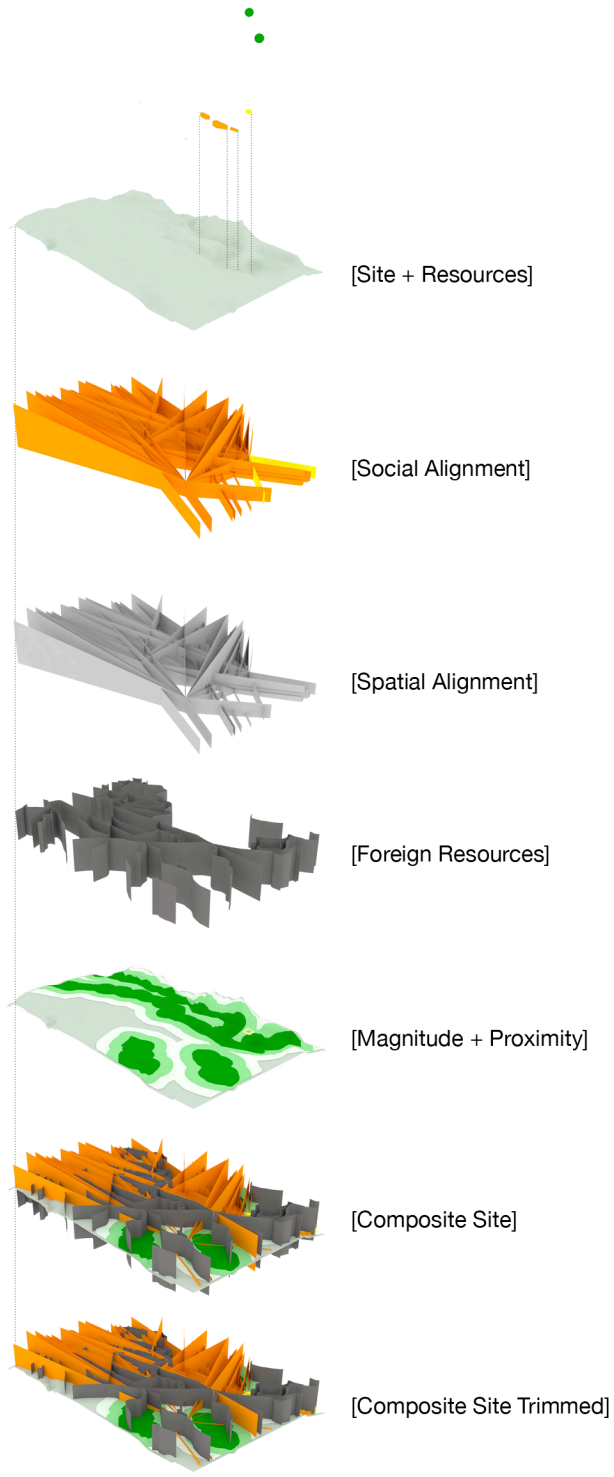


Image VI.6.2 Composite Place Frame

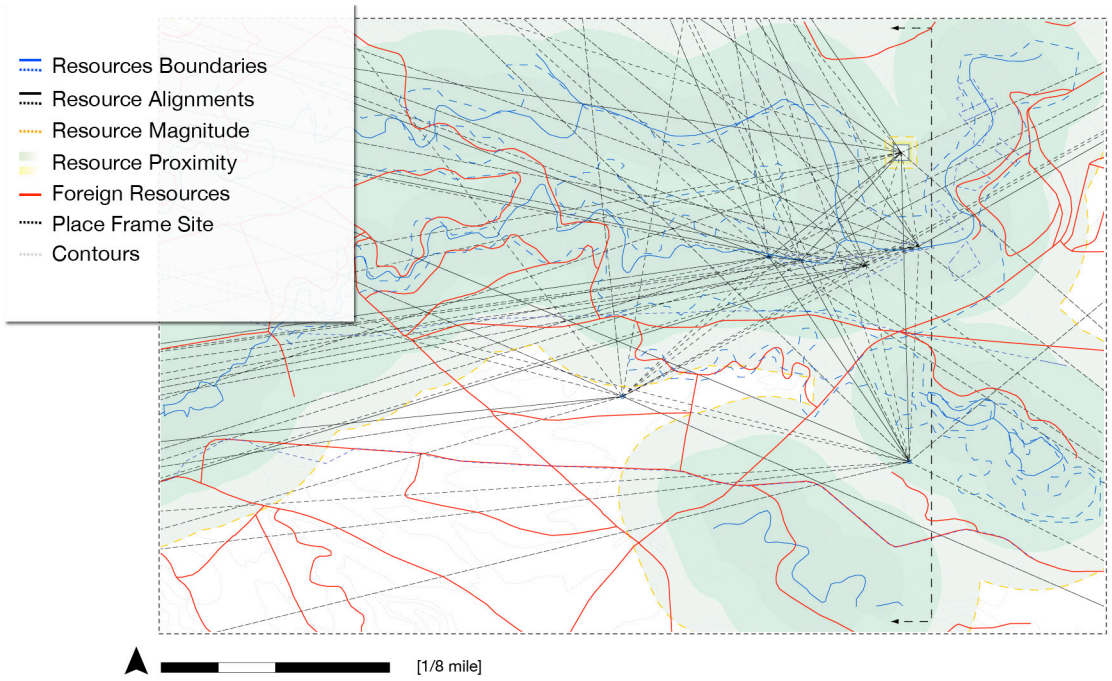


Image VI.6.3 Place Frame Base Map

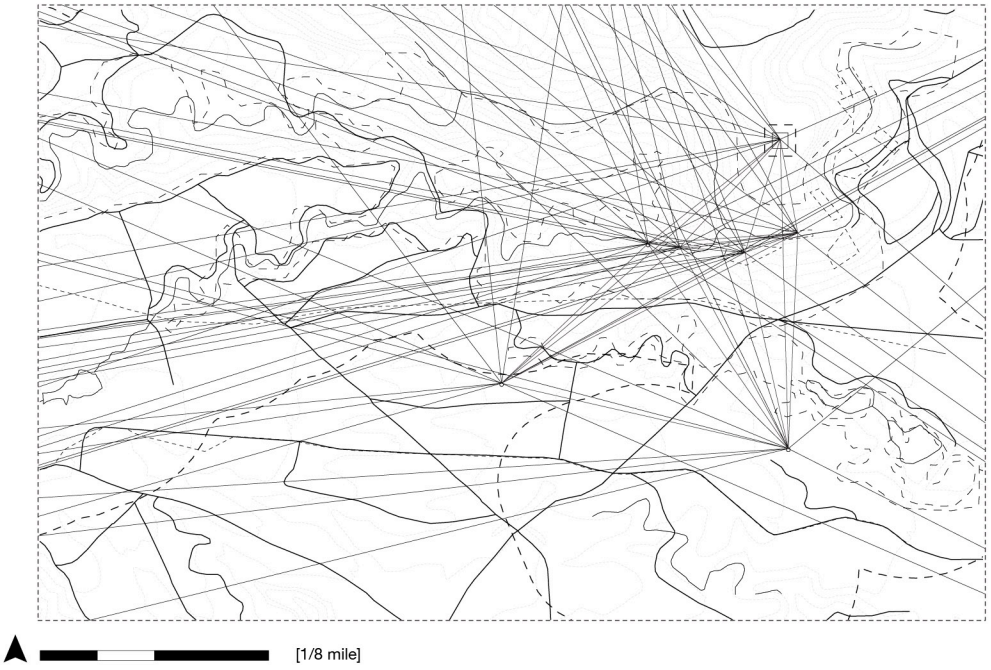


Image VI.6.4 Place Frame Site Boundary [Example 1]

Image VI.6.5 Place Frame Resources of Influence [Example 1]

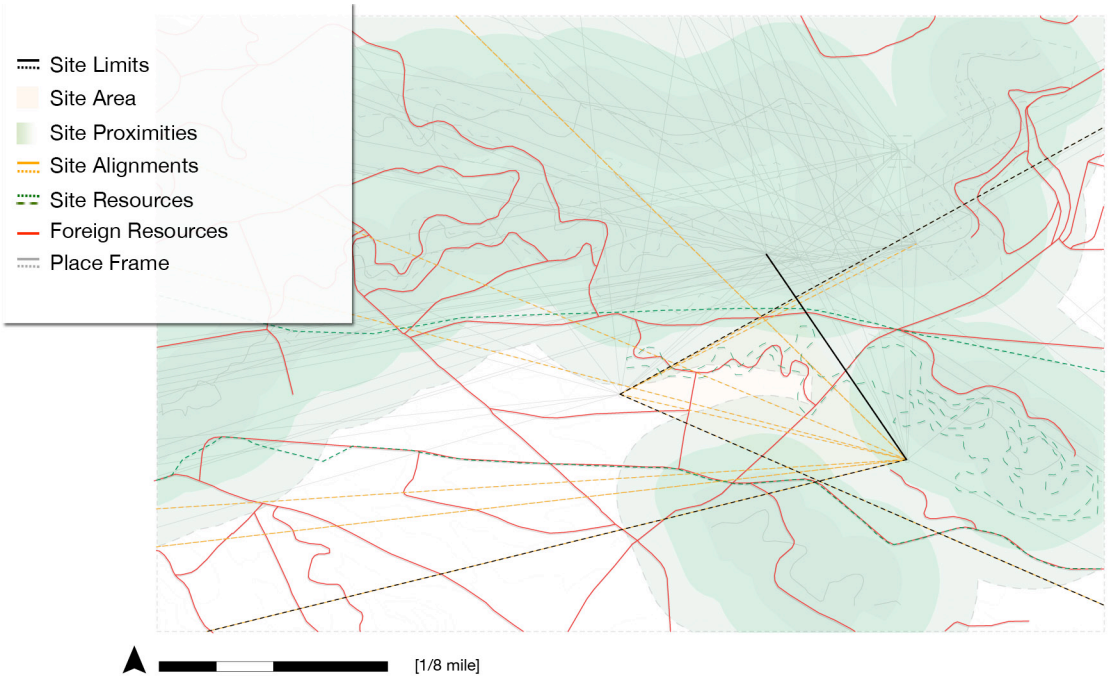
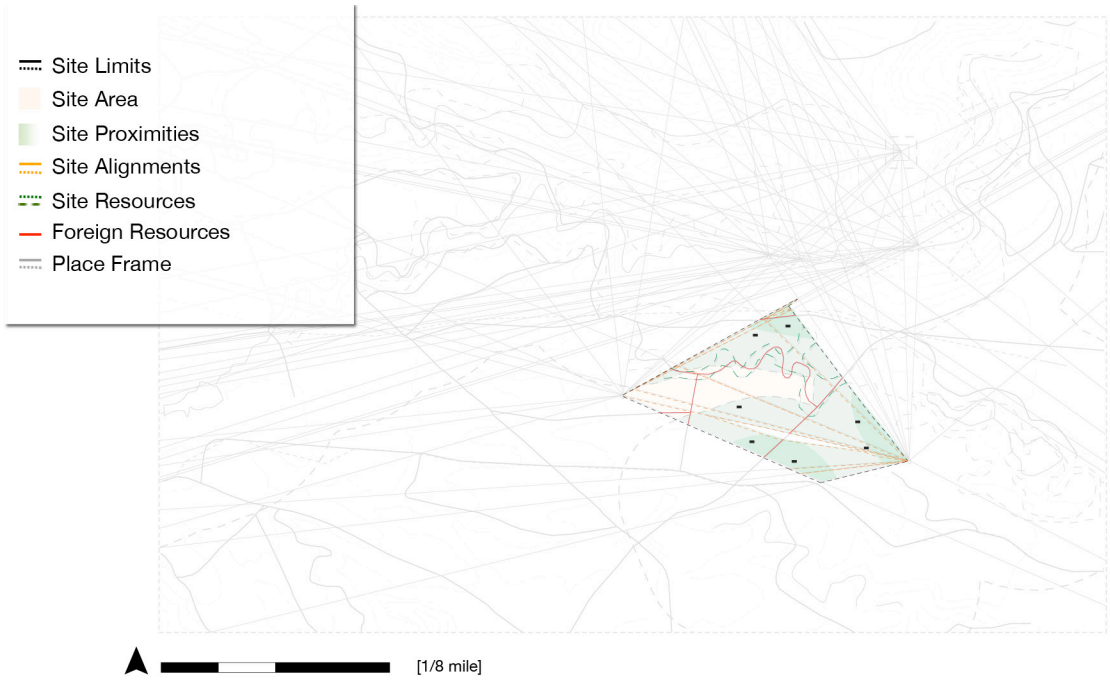


Image VI.6.6 Place Frame Resources of Influence Base [Example 1]*



***Note:** Refer to image VI.6.10 for close-up of homestead delineation

Image VI.6.7 Place Frame Site [*Focused Area*] [Example 1]

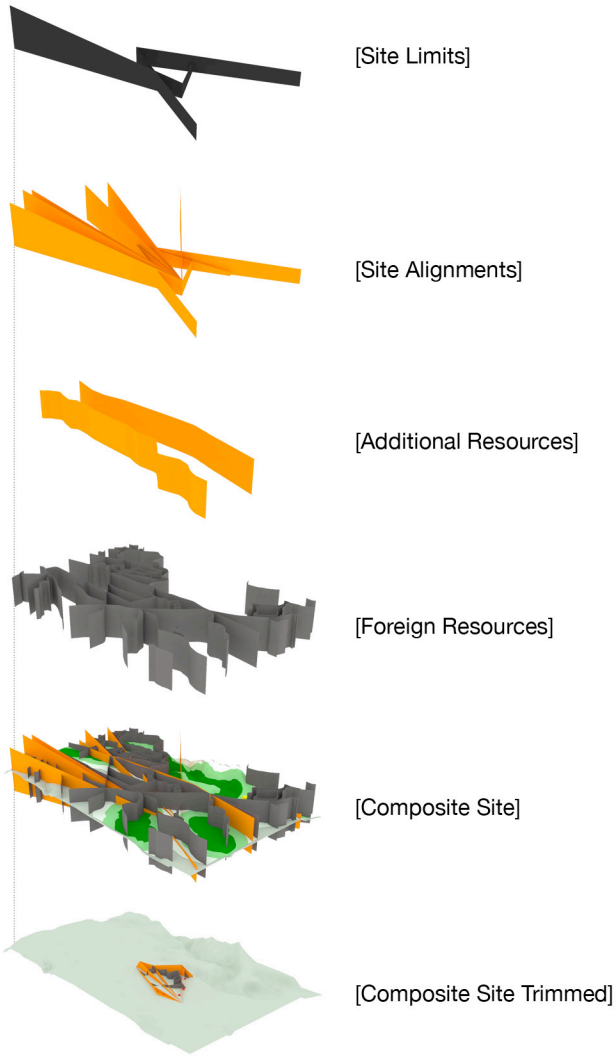


Image VI.6.8 Place Frame Site [*Focused Area*] [Example 1]

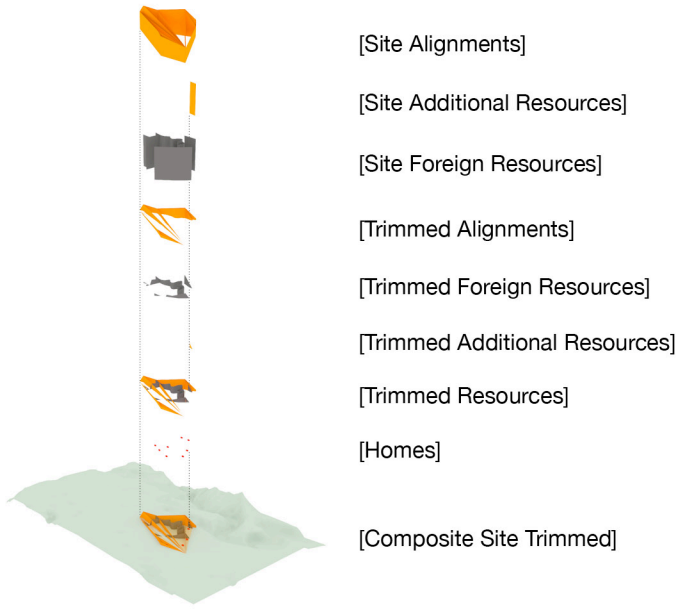


Image VI.6.9 Place Frame Site [*Focused Area*] [Example 1]

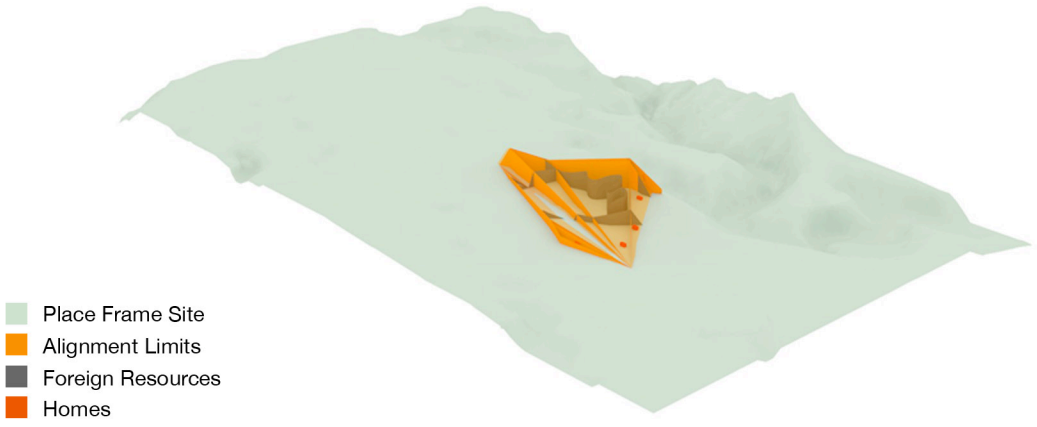


Image VI.6.10 Place Frame Site Plan [Example 1]

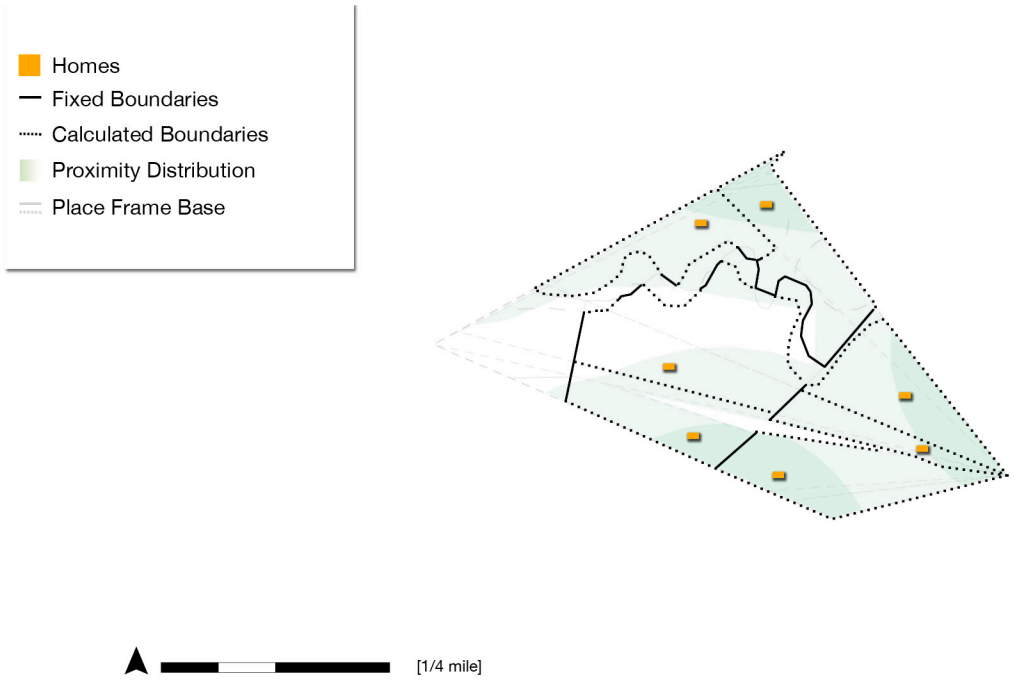


Image VI.6.11 Place Frame Community [Example 1]

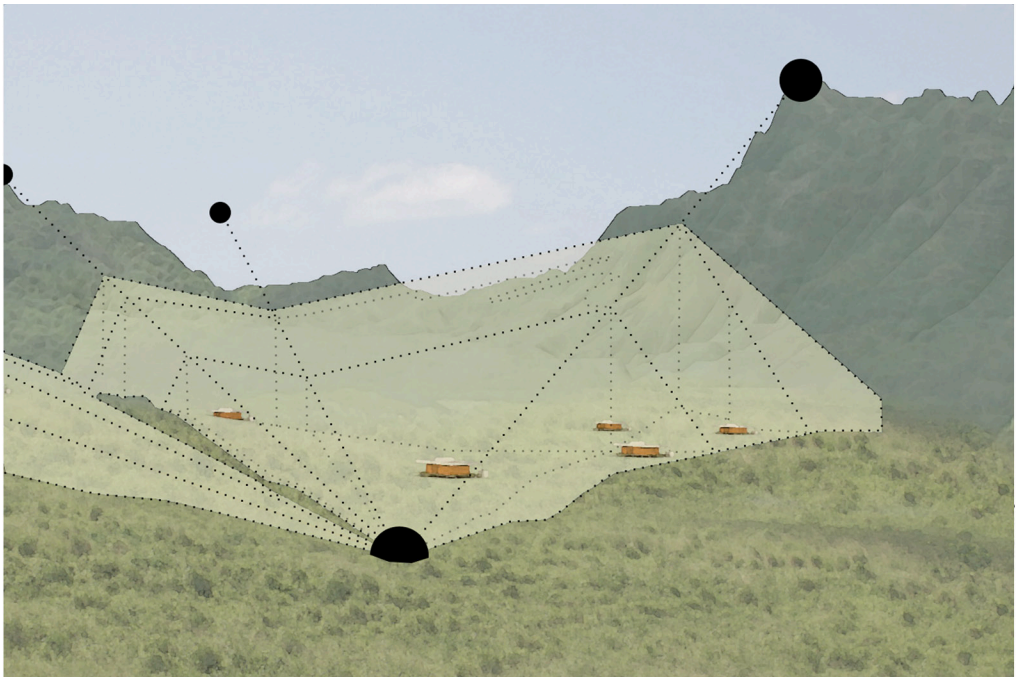


Image VI.6.12 Place Frame Site Plan [Single Homestead] [Example 1]

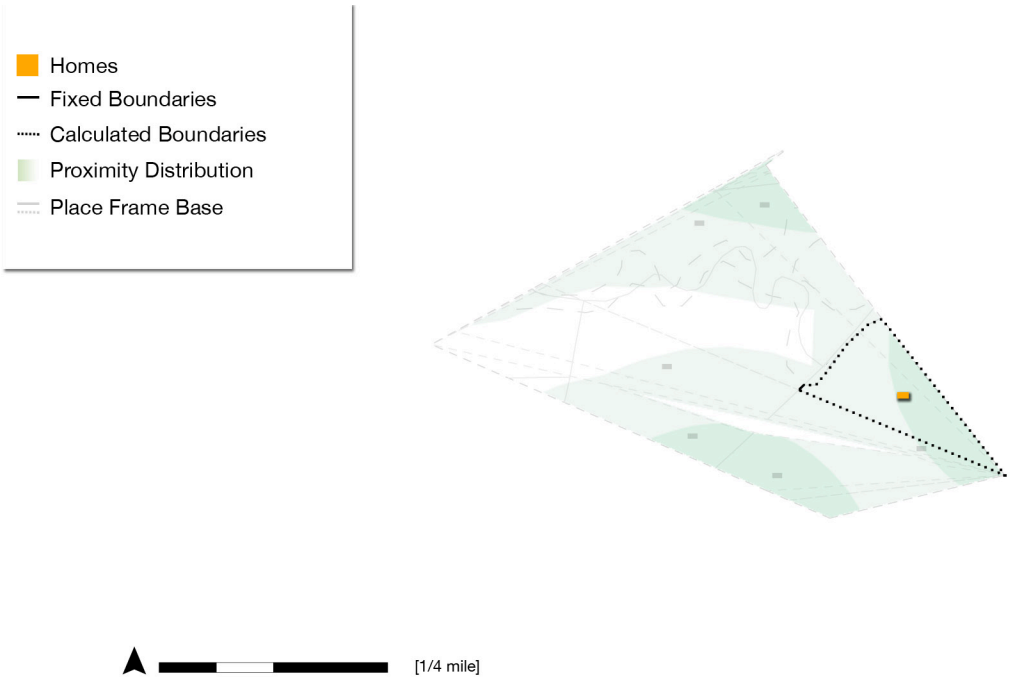


Image VI.6.13 Place Frame Community [Example 1]

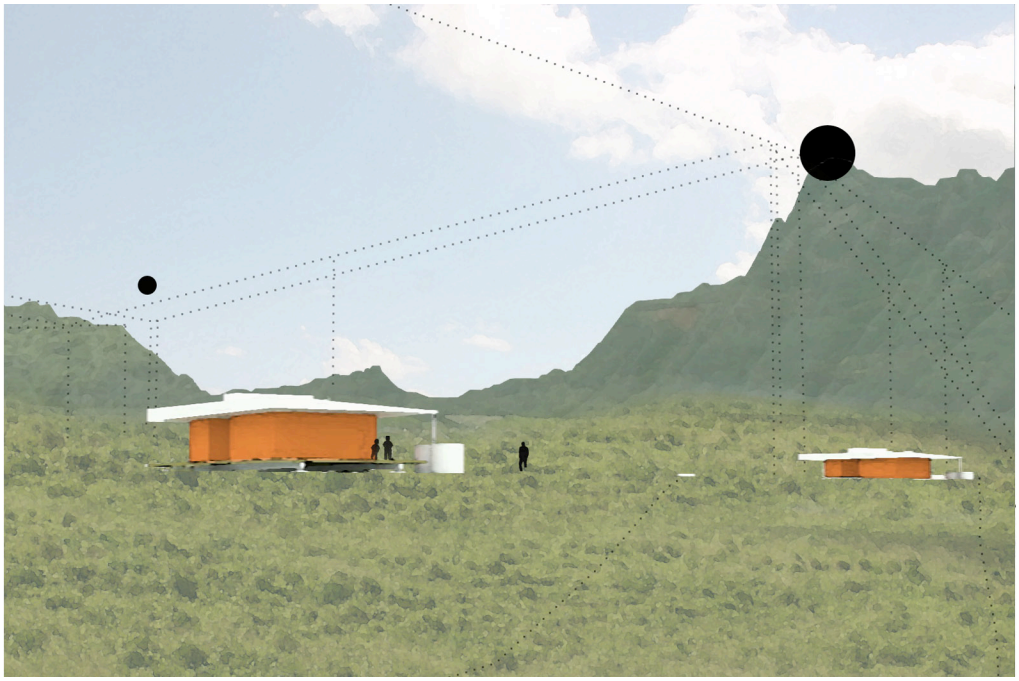


Image VI.6.14 Homestead Layout Variation [Density] [Example 2]

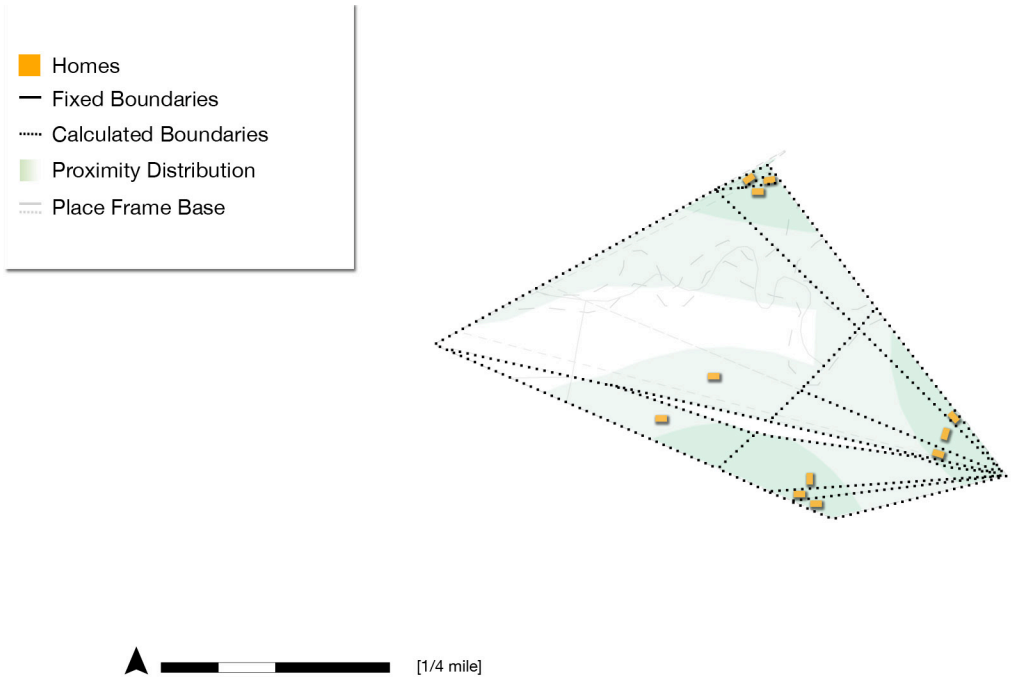


Image VI.6.15 Homestead Layout Variation [Dispersal] [Example 3]

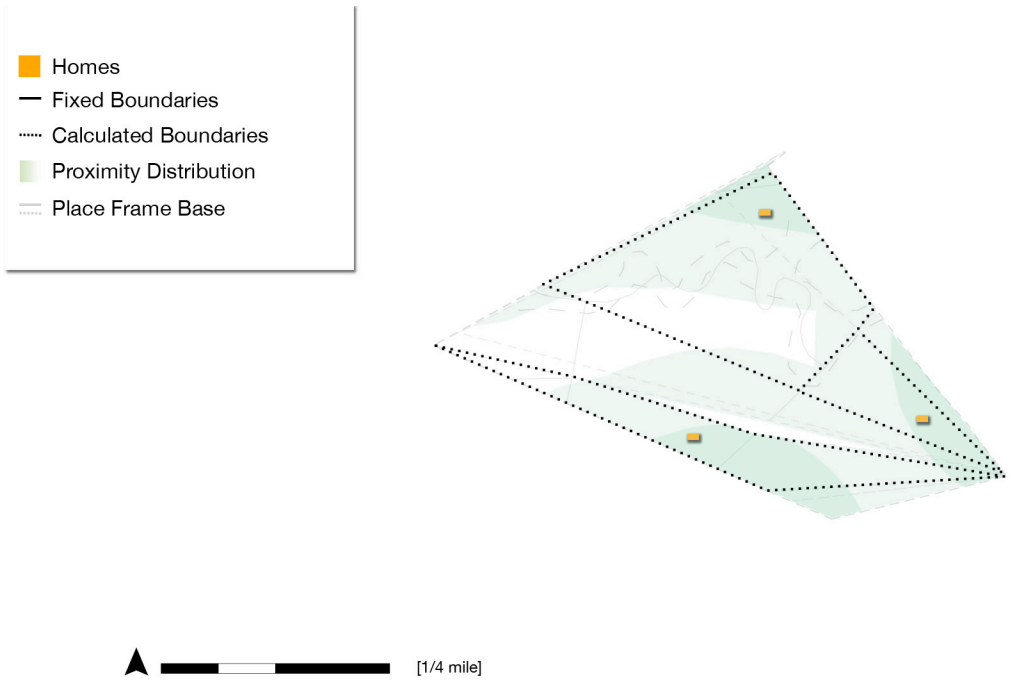
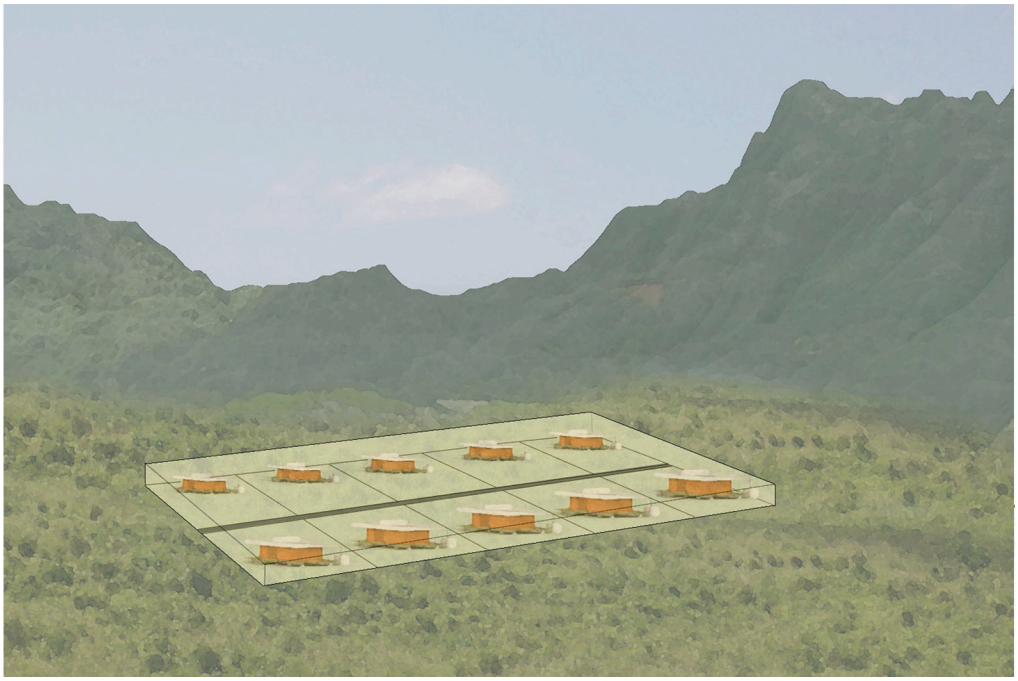


Image VI.6.16 Existing Anahola Homesteads*

***Note:** In the contemporary setting, proximity distribution is taken from the resource that supports the community. Image VI.6.16 shows the relative proximities of the road and primary infrastructure network.

Image VI.6.17 Existing [Foreign-Based] Pattern applied to Place Frame Site



Application Review

Economic and political based resources govern the *Place Frame* example at Anahola. Both of these resource groups produce varying boundary and axis topologies, which inform the division of space. While there are influential religious resources on site, each resources impact is limited due to a lack of additional religious associations. The result of the various site resources and conditions is a *Place Frame* conducive to economic and political subdivision that encourages functions like agricultural production and homestead development.

A majority of the spaces formed by the *Place Frame* are bounded by calculated limits creating a site with a high level of permeability. The sites only fixed boundaries come from the [focused] sites outer limits and existing road networks. Rather than disregarding the roads [which are considered foreign resources], this project has chosen to integrate them. In doing so it allows the development to have connectivity with the broader community.

The *Place Frames* end result is a community layout favorable for homestead development. Connectivity to agricultural resources and permeable boundaries make for easy site movement, improved grounds for cross-family interaction, and the opportunity for self-sufficiency.

Homestead Design Review

The spaces created by the *Place Frame* provide a great deal of flexibility when placing homes and families on the site. At this point, the design solution only intends to create a spatial framework within which homes and inhabitants can be placed. The organization of homes and relationships of people within the framework is open to community's objectives. Understanding relationships of homes and people will be key in further developing research done by this project.

Images VI. 6.4 – VI. 6.13 illustrate a complete homestead development process using the *Place Frame* system. Boundary selection and homestead placement follow no definitive process. The only constituents to homestead selection and placement are that all processes respect social and spatial limits provided by the framework. Almost every design possibility within social and spatial framework rules is a viable solution. Thus, selection of each spatial limit and home location depends on objectives of the community.

While there is only one complete example [Example 1] of how a homestead community is created, there are numbers of homestead variations available. Images VI.6.14 [Example 2] and VI.6.15 [Example 3] illustrate two homestead variations. Image VI.6.14 is an example of a community layout that concentrates density. The homestead layout in Image VI.6.14 could be a result of a number of variables, which include: greater yielding economic-based cultural resources or groupings of families. Image VI.6.15 is an example of a community layout that results in a dispersed community. The creation of a dispersed community could also be a result of a number of variables, which include: poor yielding agricultural resources that require more land for agricultural production or the desire for privacy.

Success of the *Place Frame* and resulting homestead community are marked by the designs ability to provide organizational order and potential tenure, while maintaining a great deal of site use and resource accessibility. Images VI.6.16 – VI.6.17 are provided to differentiate the proposed and existing system. Both examples [Image VI.6.16 and VI.6.17] show rigidity of community layout, lack of landscape accessibility and disregard for cultural resource integration. By applying the proposed *Place Frame* and designing communities according to provided guidelines, issues associated with conventional homestead development are likely to be overcome. Collective benefits and potential improvements for this project, design process and design solution are discussed in the next chapter.

VII. LOOKING FORWARD

The Benefits of the Design Guide

As displayed by the *Place Frame* design, translating the spatial relationships of cultural resources can create potential strategies to improve current development systems. Advantages of applying the proposed methodology and respective principles include:

- Indigenous-based alternative to the current foreign based design methodology with new tools for spatial delineation
- Creation of culturally-associated spaces
- Options for self-sufficiency and foreign system integration
- Redefinition of land use, tenure and property boundaries
- Greater mobility and accessibility across the landscape allowing greater interaction between inhabitants and site-related cultural resources
- Homestead density near cultural resources and dispersal away from resources
- Development methodology that can be adapted by other cultures

Of all the benefits provided, the most important is the retention of culture in the design and development process. It is from the natural land and cultural resources that native Hawaiians draw their identity. Integrating these aspects of culture into the design process not only redirects the current foreign-based methodologies, but provides an opportunity for the people to reconnect with the resources and culture that gives identity to them and the places they live in.

Areas for Future Exploration

While the proposed methodology and design guide provide an insightful look at how design and development can be re-centered on Hawaiian culture, there is a great deal of work that still needs to be done to represent the cultural concepts and constructs in their entirety. Areas that should be expanded on and looked into in further detail include:

- Additional information on the spatial and social importance of cultural resources and relationships [i.e. researching archived indigenous documents that might discuss indigenous views on space]
- System for efficiently managing circulation through the community, preferably based on indigenous information
- Integration of foreign resources
- Integration of the human component and the location of homes within each space
- Supplementary community management plan that provides direction as to how development should occur and how people can maintain the integrity of the land and culture
- Application of the methodology at other sites
- Application of the methodology for other cultures

By addressing these issues the following improvements to the current project and design guides should emerge; a more accurate and global application of the design guidelines, a refined understanding of cultural resources and their roles in spatial delineation and an improved integration of indigenous and foreign design methodologies.

Summary of Findings

The project's objective to create a culturally based system for development using cultural resources to delineate space has been achieved through creation of design guidelines and a corresponding *Place Frame*. Application at Anahola provides a new solution to current design systems employed by DHHL. As examples at Keaukaha and Anahola illustrate, DHHL's current design methods are far removed from the culture they seek to restore. By incorporating this project's design methodology there is the potential for actively engaging culture in the community design process.

Where and how people engage with homestead spaces is an important component in the function of the homestead community. Each of the design examples [See Images VI.6.3-17] in **Chapter VI** provides variations in the way community members might settle and utilize spaces within the *Place Frame*. For now, homestead design and development is limited to various spatial boundaries and functions that can occur within each space.

Beyond development of the *Place Frame* there is little information provided for organization of homes and objects located within designated homestead spaces. Additional information that guides inhabitants in placement of their homes and how each home is to relate to surrounding contexts will be key in further developing this projects proposed design methodology. For now, selection of spatial limits and relationships are only expected to adhere to *Place Frame* guidelines. As more information is added to this project, guides for locating homes and specific social interaction patterns will likely emerge, thus forming new sets of information for homestead development.

The information provided by the project also presents the opportunity to improve upon existing bodies of information used for designing at the community scale, most notably Geographic Information Systems [GIS]. Translating the various social and spatial relationships created by the design methodology into GIS layers can serve as useful guides for those looking to incorporate culture into the design process. The cultural concepts in **Chapter III** and cultural constructs described in **Chapter V** all have the potential of being translated into topological sets of cultural-based information.

While solutions provided by the proposed methodology show how the spatial attributes of Hawaiian culture can be formed into an improved system for design, the representation of these concepts still has a long way to go. Much more research must be conducted in regard to the cultural elements used. In addition, the integration of the foreign systems should also be considered in further depth to show how the proposed design can work at multiple levels of integration.

In a broader, more global scope, this project provides a methodology that can be adapted by other cultures. The concept of translating indigenous views of space into a system for spatial delineation is not limited to the Hawaiian culture. Rather, all people have the opportunity of forming design solutions from the indigenous culture that gives a place identity. The key is in understanding the importance of specific cultural resources and their influence on spatial relationships. By addressing this, culture can play a significant role in the design and development process.

Closing Statement

DHHL's initiative to reconnect and rehabilitate the Hawaiian people to their land is a noble and righteous cause, yet if the places and communities they are creating in no way engage with the land and culture of the people, are their objectives really being achieved? While I leave the answer to this question open, I would like to ask that you the reader consider the words of the late native Hawaiian musician, Israel Kamakawiwo'ole[52];

Could you just imagine if they came back
and saw traffic lights and railroad tracks
How would they feel about this modern city life

Tears would come from each others' eyes as
they would stop to realize
that our land is in great, great danger now

It is in the same spirit that I beg to question whether or not the systems accepted by modern Hawaiians are something our ancestors would be proud of. Would they rejoice at the conveniences of the modern life or would they cringe at the changing of the land? How would they feel?
As a Native Hawaiian and beneficiary of the Hawaiian culture, I believe all who live here have the responsibility to honor the past while looking to improve the future of our culture. In doing so we must consider each choice we make and the impact that decision has on the perpetuation of the land, culture and people. It is only by honoring what has come before and considering our how we look to shape our future that we can truly move forward without losing sight of our past.

[52] Kamakawiwo'ole, Israel. "Hawai'i 78." *Facing Future.* Mountain Apple Company. 1993.

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IX. INDEX / APPENDIX

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Hawaiian Definitions[53]

'Ae kai:	Water's edge
Ahu:	Alter
Ahupua'a:	Watershed based political boundaries
'Ai:	Food, Food Plant
'Aina:	Land, Earth
Akua:	God, Spirit, Deity
Ali'i:	Chief
'Ama'u:	Place where ferns are found
'Apoho:	Depression, void, open pit
Heiau:	Place of worship [pre-Christian]
'Ili:	Homestead like subdivisions
'Ilima:	Place where *'ilima* grow
Ika:	Bounds formed by the elimination of weeds and grass
Iwi:	Ridge formed by stones bordering cultivated land
Ka ho'oku'i:	Zenith
Kahakai:	Beach, sea shore, coastline
Kahaone:	Sandy beach
Kai Kohala:	Ocean region where the whales swim
Kalawa:	Road along beach
Kanawai:	Law, Rules
Kane:	Hawaiian deity
Kapu:	Taboo, Prohibited area
Kauhale:	Grouping of dwelling structures
Kihapai:	Cultivated land
Koele:	Land cultivated for ali'i and konohiki
Kuahea:	Stunted tree growth region due to altitude
Kuahiwi:	Mountain, Ridge
Kuakua:	Small arable land sections
Kuamauna:	Directly in back or front of summit
Kualono:	Region near mountain top, Ridge
Kuauna:	Taro banks used for planting
Kuhikuhipu'uone:	One who pointed out the sand dunes, Architect
Kula:	Plain, field open country
Lewa:	Upper heaven regions
Lono:	Hawaiian deity
Lo'i:	Taro patch
Maka'ainana:	Commoner
Mala:	Sweet potato patch, lined with stones
Mana:	Supernatural divine power, force
Ma'ukele:	Rainforest area
Moku:	Island
Moku la'au:	Tree grove
'Ohana:	Family
Okana:	Island political boundaries

[53] Elbert, Samuel L. and Puku'i, Mary Kawena. *Hawaiian Dictionary.* Honolulu, HI. University of Hawai'i Press. 2003
Malo, David. "Hawaiian Antiquities." Honolulu, HI: First People's Productions. 2006.

Pahe‘e:	Cleared area, bare dirt
Pauku:	Parcels of land where taro was grown
Pou:	Post, Pillar
Pu‘u:	Hill, Protuberance
Ulu la‘au:	Forest, Grove of trees
Ulunahele:	Wild growth area
Wai:	Fresh water
Waiwai:	Wealth
Waolipo:	Inland region
Wao akua:	Spirit inhabited region
Wao kanaka:	Human frequented region
Wao koa:	Scared region where *koa* grows
Wahi pana:	Storied place
Waonahele:	Inland forest region, jungle, desert